Ministry of Public Works, Egypt.—Physical Department

REPORT ON THE WEATHER AND STATE OF THE RIVER FOR JANUARY, 1938

The Weather

Changeable, with frequent rainy spells. An outstanding feature was the occurrence of heavy rainstorms in Upper Egypt at the end of the month.

At the beginning of the month mild southeasterly winds prevailed but on the 5th strong southwest winds due to the presence of a depression over Asia Minor traversed Egypt, reaching a velocity of 80 kilometres an hour at Alexandria, and causing a sharp fall of temperature, with scattered showers.

On the 13th a shallow depression was situated off Port Said, and heavy rain fell in the Delta and other parts of Lower Egypt on the 13th and 14th. At Alexandria 29 millimetres were recorded on the 13th, and on the following day northwesterly winds reached gale force in many places ; a velocity of 82 kilometres an hour was recorded at Alexandria, and heavy showers accompanied in places by thunderstorms were widespread. Cool weather, with frequent but light showers, prevailed for a few days, and was then succeeded by a spell of fine, mild weather lasting until the 24th, when a small depression traversed the eastern Mediterranean towards Syria. Rainy weather in Egypt then lasted for two or three days.

The weather was unsettled in an unusual manner on the 29th and 30th. A system of deep depressions over the Mediterranean resulted in southwesterly gales throughout the eastern Mediterranean and Lower Egypt, causing sandstorms in many places, while apparently a depression traversed Upper Egypt from the Libyan Desert, causing remarkably heavy rain for such a normally dry locality. In the two days 16 millimetres fell at Minya and 13 at Asyut, and the rainfall area extended from Dakhla Oasis in the west to the Red Sea in the east, and from Luxor in the south to Cairo and Suez in the north.

For the month as a whole, the barometric pressure was everywhere appreciably below normal, while except in Lower Egypt the temperature was slightly above normal. Rainfall was above normal throughout Egypt ; at Alexandria rain fell on 17 days, though on six of them its amount was hardly measurable.

TABLE SHOWING THE DEPARTURE FROM NORMAL FOR JANUARY 1938

DISTRICTS	BAROMETRIC PRESSURE		TEMPERATURE						RAINFALL	
			MAXIMUM		MINIMUM		MAX.+MIN./2			
	1938	Difference from Normal	1938	Difference from Normal	1938	Difference from Normal	1938	Difference from Normal	1938	Difference from Normal
	m.b.	m.b.	°C.	°C.	°C.	°C.	°C.	°C.	mm.	mm.
I. Mediterranean	1016·2	—2·3	18·3	0·0	10·2	+0·4	14·2	+0·2	42	+4
II. Lower Egypt	1016·9	—2·5	19·1	−0·8	6·7	0·0	12·9	—0·4	14	+1
III. Middle Egypt	1017·4	—2·0	19·5	+0·5	7·9	+0·2	13·7	+0·4	7	+2
IV. Upper Egypt	1018·0	—1·7	21·7	+0·4	7·6	+0·6	14·6	+0·5	5	—
V. Western Desert ...	1018·6	—1·3	20·7	—0·5	6·2	+1·3	13·4	+0·4	0	—
VI. Red Sea (Egypt) ...	1016·4	—1·8	22·1	+0·4	12·0	+1·0	17·0	+0·7	4	+3
*VII. Red Sea (Sudan) ...	1014·1	—1·5	27·2	+0.1	20·9	+1·0	24·0	+0·6	0	— 7
VIII. North Sudan	1014·0	—1·3	30·5	+0·5	13·8	+0·8	22·2	+0·6	0	0
IX. Central Sudan... ...	1011·6	—1·8	33·8	+0·8	14·3	+1·0	24·0	+0·9	0	0
X. South Sudan	1009·9	—1·1	36·6	+0·4	19·8	+1·3	28·2	+0·8	4	+ 3

*Port Sudan only.

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National Oceanic and Atmospheric Administration

Environmental Data Rescue Program

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State of the River

Lake Albert at Butiaba fell nine centimetres during the month. Its level on February 1, 1938 was 57 centimetres above the normal and 59 centimetres above that of the corresponding day of last year.

The Bahr el Jebel at Juba fell slightly throughout the month. The levels were above the normal and much above those of last year.

The River Sobat at Nasser fell at normal rate during the first ten days and slower than normally thereafter, the levels in general being a few centimetres above those of last year.

The White Nile at Malakal fell at almost normal rate, the levels throughout the month being below the normal but above those of last year. The rise D.S. Gebel Aulia Dam from the 22nd to the 25th was due to the fluctuations of the Reservoir levels. The levels were above last year's except for the period 16–20 when they were practically the same.

The Blue Nile at Roseires fell at normal rate. The levels were above the normal, but a few centimetres below those of last year. At Khartoum also the Blue Nile fell at normal rate during the first 13 days, then fluctuated below the normal for the rest of the month owing to the regulation of Gebel Aulia Dam. The levels were a few centimetres below the normal throughout the month, but above last year's during the first 13 days, then fluctuated about them for the rest of the month.

The Main Nile at Kajnarti fell at about normal rate during the first fortnight and faster than normal rate thereafter. The levels were below the normal throughout the month, but above last year's until the 27th and a few centimetres below them for the rest of the month.

The differences of the mean levels in January 1938 from those of January 1937 and from the normal 1906-1935 were :—

STATION	MEAN DIFFERENCES OF LEVELS	
	January 1938 Minus January 1937	January 1938 Minus Normal
	Metre	Metre
Juba	+ 0·34	+ 0·17
Nasser	+ 0·15	— 0·62*
Malakal	+ 0·26	— 0·38
Roseires	— 0·12	+ 0·28
Khartoum	+ 0·04	— 0·18
Kajnarti	+ 0·13	— 0·25

* Nasser normal is for 1922-1935 only.

Discharges of the Nile during December, 1937

(Observed by the Irrigation Department)

Esna (Main Nile)

(Kilo. 2·8 D.S. Barrage)

Day of Month	Gauge Reading m.	Disch. m³. p.s.
2	73·58	1650
9	73·60	1690
16	72·97	1370
23	72·83	1110
30	72·92	1160
Approx. Monthly Mean		1410
Normal Mean 1933-1936		1320

Aswan

(Measured by Sluices)

(Aswan D.S. Gauge)

Day of Month	Gauge Reading m.	Disch. m³. p.s.
1	87·02	1620
2	87·04	1620
3	87·03	1620
4	87·02	1620
5	87·01	1620
6	87·01	1620
7	87·01	1620
8	87·00	1620
9	87·00	1620
10	86·99	1620
11	86·93	1560
12	86·77	1450
13	86·60	1330
14	86·43	1220
15	86·35	1160
16	86·34	1160
17	86·33	1160
18	86·33	1160
19	86·32	1160
20	86·32	1160
21	86·33	1160
22	86·33	1160
23	86·33	1160
24	86·31	1160
25	86·31	1160
26	86·31	1160
27	86·39	1220
28	86·39	1210
29	86·39	1220
30	86.46	1270
31	86·47	1270
Approx. Monthly Mean		1350
Normal Mean 1912-1936		1450

Kajnarty (Main Nile)

Day of Month	Gauge Reading m.	Disch. m³. p.s.
1	134·73	1810
12	134·40	1640
13	134·36	1610
14	134·33	1590
15	134·29	1570
16	134·27	1540
17	134·28	1540
19	134·36	1610
20	134·39	1620
22	134·29	1550
24	134·20	1540
27	134·16	1480
28	134·15	1490
29	134·12	1450
30	134·10	1440
31	134·08	1440
Approx. Monthly Mean		1610
Normal Mean 1912-1936		1760

River Atbara

(1·15 Kms. U.S. Bridge)

Kilo. 3 Gauge.

Day of Month	Gauge Reading m.	Disch. m³. p.s.	
6	9·99	28	
12	9·96	27	§
16	9·90	18	§
20	9·85	13	§
Approx. Monthly Mean		18	
Normal Mean 1912-1936		17	

Hassanab (Main Nile)

Day of Month	Gauge Reading m.	Disch. m³. p.s.
5	11·70	1460
11	11·73	1610
15	11·64	1460
19	11·61	1500
25	11·53	1390
29	11·49	1350
Approx. Monthly Mean		1460
Normal Mean 1912-1936		1560

Tamaniat (Main Nile)

Day of Month	Gauge Reading m.	Disch. m³. p.s.
3	11·38	1460
8	11·46	1560
13	11·34	1440
17	11·32	1480
23	11·24	1330
27	11·20	1330
Approx. Monthly Mean		1420
Normal Mean 1912-1936		1570

Khartoum (Blue Nile)

Day of Month	Gauge Reading m.	Disch. m³. p.s.
2	11·61	483
7	11·70	591*
12	11·53	413*
16	11·51	414*
22	11·39	312*
26	11·34	322*
Approx. Monthly Mean		411
Normal Mean 1912-1936		494

Hillet Sherif (Blue Nile)

(Old Sennar Gauge)

Day of Month	Gauge Reading m.	Disch. m³. p.s.
1	10·89	460
3	11·21	631
6	10·88	490
8	10·78	433
11	10·76	424
13	10·75	421
15	10·65	379
18	10·55	344
20	10·52	324
22	10·51	322
25	10·51	325
27	10·46	306
29	10·38	286
Approx. Monthly Mean		392
Normal Mean 1912-1936		467

Gezira Main Canal

(Kilo. 1·3)

Day of Month	Gauge Reading m.	Disch. m³. p.s.
9	16·07	70
9	16·07	72
26	16·14	76
26	16·14	74
Approx. Monthly Mean		73
Normal Mean 1925-1936		60

Roseires (Blue Nile)

Day of Month	Gauge Reading m.	Disch. m³. p.s.
1	13·73	686
3	13·56	622
5	13·45	591
7	13·36	543
9	13·29	526
11	13·21	488
13	13·16	468
15	13·10	458
17	13·06	446
19	13·02	427
21	13·02	430
23	12·98	418
25	12·90	388
27	12·83	375
29	12·78	361
31	12·72	342
Approx Monthly Mean		472
Normal Mean 1912-1936		504

Mogren (White Nile)

Day of Month	Gauge Reading m.	Disch. m³. p.s.
1	11·90	999
6	11·90	983
11	11·82	980
15	11·78	1030
21	11·70	1040
25	11·64	1020
Approx. Monthly Mean		1000
Normal Mean 1912-1936		1080

Renk (White Nile)

Day of Month	Gauge Reading m.	Disch. m³. p.s.
7	11·85	1170
12	11·84	1180
17	11·82	1160
22	11·80	1070
26	11·75	1080
29	11·70	1060
31	11·64	1000
Approx. Monthly Mean		1130
Normal Mean 1928-1936		1140

Malakal (White Nile)

Day of Month	Gauge Reading m.	Disch. m³. p.s.
5	12·34	1120
10	12·29	1120
15	12·21	1080
20	12·07	1000
25	11·84	944
30	11·59	839
Approx. Monthly Mean		1030
Normal Mean 1912-1936		1110

Hillet Doleib (River Sobat)

Day of Month	Gauge Reading m.	Disch. m³. p.s.
2	13·67	726
10	13·57	678
17	13·42	576
25	13·00	406
Approx. Monthly Mean		553
Normal Mean 1912-1936		630

River Sobat (At Head)

(Nasser Gauge)

Day of Month	Gauge Reading m.	Disch. m³. p.s.
3	9·87	475
13	8·93	416
23	7·82	295
28	7·06	235+
29	6·94	228+
30	6·83	221+
Approx. Monthly Mean		363
Normal Mean 1929-1936		394

River Gila (At Mouth)

(Gila Gauge)

Day of Month	Gauge Reading m.	Disch. m³. p.s.
2	9·63	89
12	9·07	93
22	7·97	65
Approx. Monthly Mean		72
Normal Mean 1929-1936		46

River Pibor

(U.S. Gila Junction)

(Gila Gauge)

Day of Month	Gauge Reading m.	Disch. m³. p.s.
2	9·63	41
12	9·07	35
22	7·97	27
Approx. Monthly Mean		32
Normal Mean 1929-1936		71

Akobo (River Pibor)

Day of Month	Gauge Reading m.	Disch. m³. p.s.
1	14·22	20
11	13·71	19
21	12·70	11
Approx. Monthly Mean		14
Normal Mean 1929-1936		30

Bahr el Zeraf (Kilo. 3)

(Gauge at Mouth)

Day of Month	Gauge Reading m.	Disch. m³. p.s.
1	12·82	157
16	12·70	161
31	12·32	158
Approx. Monthly Mean		159
Normal Mean 1912-1936		160

§ Measured at 500 mts. U.S. Bridge.
* Measured at 3 kms. U.S. Soba Gauge.
+ Measures at Nasser.

Discharges of the Nile during December, 1937 (*contd*)

(Observed by the Irrigation Department)

Day of Month	Gauge Reading m.	Disch. m³. p.s.
Bahr el Zaref *(contd.)*		
(D.S. Tail Cut No. 2)		
(2·3 Kms. D.S.R.P. No. 53)		
(Gauge at Pole 53)		
9	25·66	145
24	25·63	141
Approx. Monthly Mean		143
Normal Mean 1926-1936		147
Jebel-Zeraf Cuts		
(Tail Cut No. 2)		
(Gauge at Pole 53)		
9	26·66	6
24	26·63	10
Approx. Monthly Mean		8
Normal Mean 1926-1936		21
Bahr el Zeraf		
(D.S. Tail Cut No. 1)		
9	28·34	111
24	28·29	111
Approx. Monthly Mean		112
Jebel-Zeraf Cuts		
(Tail Cut No. 1)		
9	28·34	88
24	28·29	96
Approx. Monthly Mean		91
Normal Mean 1926-1936		76
Abu Tong (White Nile)		
(Tonga Gauge)		
1	12·89	296
16	12·81	308
31	12·51	353
Approx. Monthly Mean		317
Normal Mean 1923-1936		298
Tonga Cut (at Mouth)		
15	12·82	10
30	12·52	6
Approx. Monthly Mean		8
White Nile		
(U.S. Barboi Head)		
(Tonga Gauge)		
15	12·82	295
30	12·52	322
Approx. Monthly Mean		303

Day of Month	Gauge Reading m.	Disch. m³. p.s.
White Nile *(contd.)*		
(U.S. Khor Yergol)		
15	14·15	295
30	14·00	330
Approx. Monthly Mean		309
(U.S. Maya Sinyora)		
(Lake No Gauge)		
14	14·02	298
29	13·98	318
Approx. Monthly Mean		305
(Lake No)		
13	14·02	311
28	13·99	315
Approx. Monthly Mean		312
Normal Mean 1923-1936		297
Bahr el Ghazal (at Mouth)		
(Suddite Factory Gauge)		
13	14·00	17
28	13·98	21
Approx. Monthly Mean		18
Normal Mean 1923-1936		12
Bahr el Jebel (Kilo. 3)		
(Lake No Gauge)		
13	14·02	288
28	13·99	299
Approx. Monthly Mean		293
Normal Mean 1923-1936		291
(Buffalo Cape)		
12	11·23	324
27	11·23	329
Approx. Monthly Mean		326
(D.S. Hillet Nuer)		
10	10·86	353
25	10·85	361
Approx. Monthly Mean		357
(D.S. Tail of Peake's Channel)		
(Head Cut No. 2 Gauge)		
8	26·75	378
23	26·73	389
Approx. Monthly Mean		384
Normal Mean 1927-1936		373

Day of Month	Gauge Reading m.	Disch. m³. p.s.
Peake's Channel (at Tail)		
(Head Cut No. 2 Gauge)		
6	26·76	112
20	26·73	112
Approx. Monthly Mean		112
Bahr el Jebel		
(D.S. Head Cut No. 2)		
8	26·75	260
23	26·73	271
Approx. Monthly Mean		266
Normal Mean 1926-1936		238
Jebel-Zeraf Cuts		
(Head Cut No. 2)		
8	26·75	10
23	26·73	13
Approx. Monthly Mean		11
Normal Mean 1926-1936		22
(Head Cut No. 1)		
(200 mts. D.S. the Head)		
8	12·01	93
23	11·99	96
Approx. Monthly Mean		95
Normal Mean 1926-1936		80
Bahr el Jebel		
(U.S. Head Cut No. 1)		
7	12·01	382
22	11·99	389
Approx. Monthly Mean		387
Normal Mean 1926-1936		356
Peake's Channel (at Head)		
(Peake's Track No. 1 Gauge)		
6	12·35	75
20	12·35	74
Approx. Monthly Mean		75
Bahr el Jebel		
(U.S. Head of Peake's Channel)		
(Ghabet el Inderab Gauge)		
7	12·09	499
22	12·07	513
Approx. Monthly Mean		507

Day of Month	Gauge Reading m.	Dis m³.
Bahr el Jebel *(conti*		
(D.S. Lake Nyong)		
7	10·75	5
22	10·75	5
Approx. Monthly Mean		5
(U.S. Lake Nyong)		
7	10·75	4
22	10·75	4
Approx. Monthly Mean		4
(D.S. Awai Tail 3)		
5	11·64	5
20	11·65	5
Approx. Monthly Mean		5
(D.S. Awai Tail 1)		
5	11·13	6
19	11·12	6
Approx. Monthly Mean		6
(U.S. Awai Tail 1)		
5	11·13	2
19	11·12	2
Approx. Monthly Mean		2
(Kenisa)		
4	11·15	3
18	11·16	3
Approx. Monthly Mean		3
(D.S. Khor)		
(2 Kms. U.S R.P.		10
4	11·61	3
18	11·61	3
Approx. Monthly Mean		3
(U.S. Khor)		
(2 Kms. U.S.R.P.		10
4	11·61	27
18	11·61	27
Approx. Monthly Mean		27
(D.S. Lake Papiu)		
3	11·73	44
17	11·74	44
Approx. Monthly Mean		44
Lake Papiu (at Mouth		
3	11·73	29
17	11·74	30
Approx. Monthly Mean		29

Discharges of the Nile during December, 1937 (*contd.*)

(*Observed by the Irrigation Department*)

Day of Month	Gauge Reading m.	Disch. m^3. p.s.
Bahr el Jebel		
(U.S. Lake Papiu)		
3	11·73	164
17	11·74	157
Approx. Monthly Mean		161
(U.S.R.P. 114)		
3	11·38	567
17	11·37	575
Appox. Monthly Mean		570
(Bor)		
1	11·40	765
16	11·39	762
Approx. Monthly Mean		759
Normal Mean 1912-1936		684
Khor Unyam Kojie		
(At Mouth)		
(Bor Gauge)		
1	11·40	— 67
16	11·39	— 64
Approx. Monthly Mean		—63
Normal Mean 1925-1936		—33
Bahr el Jebel		
(Gigging)		
(Western Channel)		
3	29·33	238
14	29·23	220
Approx. Monthly Mean		222
Normal Mean 1931-1936		185
(Gemeiza)		
(Eastern Channel)		
3	429·17	745
14	429·06	713
Approx. Monthly Mean		710
Normal Mean 1931-1936		611
(Terrakekka)		
1	13·71	996
13	13·54	965
Approx Monthly Mean		949
Normal Mean 1931-1936		800
Bahr el Jebel (*contd.*)		
(Mongalla)		
1	12·20	1020
7	12·10	966
13	12·04	956
19	12·01	914
25	11·98	896
Approx. Monthly Mean		939
Normal Mean 1912-1936		814
River Assua (At Mouth)		
5	1·31	19
11	1·18	11
Approx. Monthly Mean		—
Normal Mean 1923-1936		15
Bahr el Jabel		
(Meshra Surrour)		
5	9·27	962
6	9·27	949
7	9·26	962
8	9·25	958
9	9·24	929
10	9·24	942
Approx. Monthly Mean		—
Normal Mean 1913-1936		782
River Unyama (At Mouth)		
5	11·16	0
6	11·16	0
7	11·16	0
8	11·14	0
9	11·12	0
10	11·12	0
11	11·11	0
Approx. Monthly Mean		—

Occasional Discharges

(Observed by the Irrigation Department)

Date	River	Site	Gauge Reading M.	Gauge Site	Discn. m³. p.s.
		River Sobat and Tributaries			
2-12-1937	Khor Fullus	Mouth	13.67	H.Doleib	8
17-12-1937	,,	,,	13.42	,,	9
5-12-1937	Sobat	D.S. Khor Nyanding Junction	12.44	Nyanding	641
15-12-1937	,,	,, ,, ,,	11.52	Mouth	561
25-12-1937	,,	,, ,, ,,	10.26	,,	355
5-12-1937	Khor Nyanding	Mouth	12.44	,,	7
15-12-1937	,,	,,	11.52	,,	12
25-12-1937	,,	,,	10.26	,,	7
4-12-1937	Khor Tawalor	,,	9.79	Nasser	18
14-12-1937	,,	,,	8.80	,,	15
24-12-1937	,,	,,	7.66	,,	14
3-12-1937	Khor Wakau	,,	9.85	,,	63
14-12-1937	,,	,,	8.80	,,	88
23-12-1937	,,	,,	7.73	,,	51
2-12-1937	Khor Macap	,,	9.95	,,	0
12-12-1937	,,	,,	9.05	,,	0
22-12-1937	,,	,,	7.90	,,	0
1-12-1937	Khor Geni	,,	14.22	Akobo	0
11-12-1937	,,	,,	13.71	,,	0
21-12-1937	,,	,,	12.70	,,	0
1-12-1937	Akobo	,,	14.22	,,	13
11-12-1937	,,	,,	13.71	,,	13
21-12-1937	,,	,,	12.70	,,	8
21-12-1937	Agwei	,,	12.70	,,	0
		White Nile			
16-12-1937	Khor Attar	Mouth	12.82	Fenikang	0
31-12-1937	,,	,,	12.25	,,	0
15-12-1937	Khor Yergol	,,	14.15	Khor yergol	0
30-12-1937	,,	,,	14.00	,,	0
14-12-1937	Outlet on L. Bank	Mouth ; 200 mts. U.S.R.P. No. 6	14.15	,,	2
29-12-1937	,,	,, ,, ,, ,, 6	14.01	,,	2
14-12-1937	Maya Sinyora	,,	14.02	Lake No	0
29-12-1937	,,	,,	13.98	,,	0
		Bahr el Ghazal			
12-12-1937	Ghazal	D.S. Khor Doleib	14.01	Suddite Factory	0
27-12-1937	,,	,, ,, ,,	13.99	,,	0
		Bahr el Jebel and Tributaries			
11-12-1937	Jebel	About 2 Kms. D.S. Pole 17	11.23	Buffalo Cape	332
26-12-1937	,,	,, ,, ,, ,, 17	11.23	,,	336
6-12-1937	Peake's Channel	About 5 Kms. U.S. Tail	26.76	Head Cut 2	116
20-12-1937	,,	,, ,, ,, ,,	26.73	,,	117
		Spills on the Bahr el Jebel			
		(Negative discharges denote Spill Out)			
22-12-1937	Spill In on L. Bank	400 mts. D.S. Lake Papiu	11.72	L. Papiu	20
16-12-1937	,,	50 ,, R.P. 121	11.39	Bor	129
22-12-1937	Spill Out on L. Bank	No. 1 between R.P. 112 & 113	11.72	L. Papiu	—3*

Occasional Discharges (*contd.*)

(*Observed by the Irrigation Department*)

Date	River	Site	Gauge Reading	Gauge Site	Disch. m³ p.s.
			M.		
		Spills on the Bahr el Jebel (*contd.*)			
22-12-1937	Spill out on L. Bank	No. 2 between R.P. 112 & 113	11.72	L. Papiu	—2*
22-12-1937	,,	,, 3 ,, ,, 112 & 113	11.72	,,	—3*
22-12-1937	,,	,, 4 ,, ,, 112 & 113	11.72	,,	—6*
22-12-1937	,,	,, 5 ,, ,, 112 & 113	11.72	,,	—1*
22-12-1937	,,	,, 6 ,, ,, 112 & 113	11.72	,,	—4*
22-12-1937	,,	,, 7 ,, ,, 112 & 113	11.72	,,	—3*
22-12-1937	,,	,, 8 ,, ,, 112 & 113	11.72	,,	—11
22-12-1937	,,	,, 9 ,, ,, 112 & 113	11.72	,,	—1*
22-12-1937	,,	,, 10 ,, ,, 112 & 113	11.72	,,	—2*
22-12-1937	,,	,, 1 ,, ,, 115 & 116	11.34	R.P. 114	—10
22-12-1937	,,	,, 1 ,, ,, 117 & 118	11.34	,,	0*
22-12-1937	,,	,, 2 ,, ,, 117 & 118	11.34	,,	—5
23-12-1937	,,	,, 3 ,, ,, 117 & 118	—	,,	—9
23-12-1937	,,	,, 4 ,, ,, 117 & 118	—	,,	—3*
23-12-1937	,,	,, 5 ,, ,, 117 & 118	—	,,	—7
23-12-1937	,,	,, 6 ,, ,, 117 & 118	—	,,	—4*
23-12-1937	,,	,, 7 ,, ,, 117 & 118	—	,,	—1*
23-12-1937	,,	,, 8 ,, ,, 117 & 118	—	,,	—2*
23-12-1937	,,	,, 1 ,, ,, 118 & 119	—	,,	—3*
23-12-1937	,,	,, 1 ,, ,, 119 & 120	11.37	Bor	—2*
23-12-1937	,,	,, 1 ,, ,, 120 & 121	11.37	,,	—7*
23-12-1937	,,	,, 1 ,, ,, 122 & 123	11.37	,,	—13
23-12-1937	,,	,, 1 ,, ,, 123 & 124	11.37	,,	—3*
23-12-1937	,,	,, 2 ,, ,, 123 & 124	11.37	,,	—1*
23-12-1937	,,	,, 3 ,, ,, 123 & 124	11.37	,,	—2*
23-12-1937	,,	,, 4 ,, ,, 123 & 124	11.37	,,	—1*
23-12-1937	,,	,, 5 ,, ,, 123 & 124	11.37	,,	—7*
24-12-1937	,,	,, 1 ,, ,, 124 & 125	11.37	,,	—1*
24-12-1937	,,	,, 2 ,, ,, 124 & 125	11.37	,,	—1*
24-12-1937	,,	,, 3 ,, ,, 124 & 125	11.37	,,	—1*
24-12-1937	,,	,, 4 ,, ,, 124 & 125	11.37	,,	—5*
24-12-1937	,,	,, 5 ,, ,, 124 & 125	11.37	,,	—1*
24-12-1937	,,	,, 6 ,, ,, 124 & 125	11.37	,,	—5*
24-12-1937	,,	,, 1 ,, ,, 125 & 126	11.37	,,	—9
24-12-1937	,,	,, 1 ,, ,, 126 & 127	21.14	Malek	—1*
24-12-1937	,,	,, 2 ,, ,, 126 & 127	21.14	,,	—3*
24-12-1937	,,	,, 1 ,, ,, 127 & 128	21.14	,,	—3*
24-12-1937	,,	,, 1 ,, ,, 128 & 129	21.14	,,	—4*
24-12-1937	,,	,, 2 ,, ,, 128 & 129	21.14	,,	—5*
24-12-1937	,,	,, 1 ,, ,, 129 & 130	21.14	,,	—10
24-12-1937	,,	,, 1 ,, ,, 130 & 131	21.14	,,	0*
24-12-1937	,,	,, 2 ,, ,, 130 & 131	21.14	,,	—2*
25-12-1937	,,	,, 1 ,, ,, 131 & Tombe	21.13	,,	—6*
25-12-1937	,,	,, 2 ,, ,, 131 & ,, ...	21.13	,,	—1*
25-12-1937	,,	,, 3 ,, ,, 131 & ,, ...	21.13	,,	—3*
25-12-1937	,,	,, 4 ,, ,, 131 & ,, ...	21.13	,,	—1*
25-12-1937	,,	,, 5 ,, ,, 131 & ,, ...	21.13	,,	—1*
25-12-1937	,,	,, 6 ,, ,, 131 & ,, ...	21.13	,,	—18
16-12-1937	Spill out on R. Bank Atem Head No 1	100 mts. S. D. Head	11.37	R.P. 114	—37

* These discharges were obtained from one current meter observation of the Surface Velocity in the middle of the stream.

Y. M. Simaika

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Ministry of Public Works, Egypt.—Physical Department

REPORT ON THE WEATHER AND STATE OF THE RIVER FOR FEBRUARY, 1938

The Weather

The outstanding feature was the occurrence of an intense cold spell during the last week.

At the beginning of the month a depression over Crete caused southerly winds and mild weather in Egypt. During its passage eastwards winds of gale force with sandstorms were experienced near the coast, and light rain fell in the north.

A thunderstorm with light rain occurred near Aswân on the 5th, and an interesting exhibition of St. Elmo's fire was observed on the instruments and tent-poles of a surveying party.

From the 6th to the 10th Egypt was under the influence of a deep depression over the eastern Mediterranean, with showery and unsettled weather in northern Egypt. A current of cold air from the Balkans traversed Egypt and a great part of the Sudan. On the 10th the temperature in Cairo did not rise above 14° C, being 7° C below the normal for the time of year. Heavy rain fell along the coast during this period. High pressure was established on the 11th, causing an improvement in the weather.

On the 13th a deep depression appeared over Greece, giving rise to southeasterly winds in Egypt. At Salum a velocity of 86 kilometres per hour was recorded. Severe sandstorms were experienced, the visibility in places falling below 50 metres at times. The weather remained mild. In Upper Egypt the weather was unsettled to an unusual degree, and moderately heavy rain was widespread, from the oases of the western desert to the Red Sea.

On the 21st a deep depression arrived north of Egypt, reaching Syria on the following day. Its passage was accompanied by strong southwest winds and severe dust storms, and the wind velocity at Alexandria reached 100 kilometres per hour. Very cold air from Greece and Asia Minor then arrived in Egypt, and a remarkable spell of cold and showery weather ensued. Sleet was reported at Alexandria. At Matruh the maximum temperature on the 25th, 26th and 27th was only 11° or 12° C. In Cairo the maximum temperature varied between 15° and 17° C, being 5° to 7° C below normal. In the early morning of the 26th the temperature at Giza and the Fayoum fell to 1° C, while the grass minimum temperature fell to 2° C below freezing point, and was below freezing point on three successive mornings (it may be noted that on 1st March 1928 the screen temperature ar Giza fell to − 0·7° C). The cold wave penetrated to the extreme south of the Sudan, and rain fell at several places in the Central Sudan.

For the month as a whole the atmospheric pressure was above normal throughout Egypt and below in the Sudan, while the temperature was below normal in Egypt and above in the Sudan. (February 1934 was much colder on the whole than this February).

Rainfall was heavy on the coast west of Alexandria, but outherwise was about normal. There were however showers at most of the oases of the western desert, and in Upper Egypt, while the occurrence of rain in the Central Sudan was very unusual for the time of year.

TABLE SHOWING THE DEPARTURE FROM NORMAL FOR FEBRUARY 1938

DISTRICTS	BAROMETRIC PRESSURE		TEMPERATURE						RAINFALL	
			MAXIMUM		MINIMUM		MAX.+MIN./2			
	1938	Difference from Normal	1938	Difference from Normal	1938	Difference from Normal	1938	Difference from Normal	1938	Difference from Normal
	m.b.	m.b.	°C.	°C.	°C.	°C.	°C.	°C.	mm.	mm.
I. Mediterranean	1018·0	+1·0	18·0	—0·9	9·9	—0·3	14·0	—0·6	28	+4
II. Lower Egypt	1018·2	+1·0	19·4	—1·0	6·4	—0·4	12·9	—0·7	11	—3
III. Middle Egypt	1018·8	+1·0	19·6	—0·9	7·2	—1·0	13·4	—1·0	3	0
IV. Upper Egypt	1018·6	+0·5	22·5	—0·8	7·8	0·0	15·2	—0·4	1	—
V. Western Desert ...	1019·4	+1·1	21·5	—1·8	6·4	+0·5	14·0	—0·6	2	—
VI. Red Sea (Egypt) ...	1017·1	+0·6	21·8	—0·4	11·3	+0·2	16·6	—0·1	0	—1
*VII. Red Sea (Sudan) ...	1014·6	—0·1	27·2	0·0	20·3	+1·2	23·8	+0·6	4	+1
VIII. North Sudan	1013·5	—0·6	32·2	+0·4	15·5	+1·8	23·8	+1·1	2	+2
IX. Central Sudan... ...	1010·8	—1·1	36·0	+1·4	16·6	+2·3	26·3	+1·8	2	+1
X. South Sudan	1009·5	—0·6	38·0	+0·7	21·5	+1·7	29·8	+1·2	5	—2

*Port Sudan only.

L. J. SUTTON,
Director, Meteorological Service.

State of the River

Lake Albert at Butiaba fell 8 centimetres during the month. Its level on March 1, 1938, was 60 centimetres above the normal and 56 centimetres above that of the corresponding day of last year.

The Bahr el Jebel at Juba fluctuated about 10 centimetres above the normal and about 20 centimetres above last year's levels during the month.

The River Sobat at Nasser fell at about normal rate, during the month. The levels were on the average a little below both the normal and last year's.

The White Nile at Malakal fell rather slower than normally, the levels being on the average about 20 centimetres below the normal but rather better than last year's. At Gebel Aulia the reservoir emptying began on the 4th, the downstream level rose from the 5th. until the 10th and then fell slowly.

The Blue Nile at Roseires fell at about normal rate, the levels being a little above normal but a little below last year's during the whole month. At Khartoum the Blue Nile fell until the 4th then owing to the regulation at Gebel Aulia rose for 3 days and then fell slowly for the rest of the month. The levels were on the average a little above normal and about 20 centimetres above those of last year.

The Main Nile at Kajnarti began to rise after the 19th owing to the Gebel Aulia reservoir contribution. The levels were on the average a little better than last year's but about 40 centimetres below the normal.

The differences of the mean levels in February 1938 from those of February 1937 and from the normal 1906–1935 were :—

STATION	MEAN DIFFERENCES OF LEVELS	
	February 1938 Minus February 1937	February 1938 Minus Normal
	Metre	Metre
Juba	+ 0·21	+ 0·09
Nasser	— 0·12	— 0·15*
Malakal	+ 0·09	— 0·19
Roseires	— 0·23	+ 0·23
Khartoum	+ 0·23	+ 0·05
Kajnarti	+ 0·12	— 0·40

* Nasser normal is for 1922-1935 only.

Discharges of the Nile during January, 1938

(Observed by the Irrigation Department)

Esna (Main Nile)

(Kilo. 2·8 D.S. Barrage)

Day of Month	Gauge Reading m.	Disch. m³. p.s.
6	73·12	1260
13	72·95	1220
21	72·92	1150
27	72·69	1100
Approx. Monthly Mean		1180
Normal Mean 1933-1937		1180

Aswan

(Measured by Sluices)

(Aswan D.S. Gauge)

Day of Month	Gauge Reading m.	Disch. m³. p.s.
1	86·47	1270
2	86·47	1270
3	86·47	1270
4	86·54	1330
5	86·54	1330
6	86·54	1330
7	86·46	1270
8	86·45	1270
9	86·47	1270
10	86·47	1270
11	86·43	1250
12	86·41	1250
13	86·41	1250
14	86·42	1250
15	86·40	1250
16	86·40	1250
17	86·44	1280
18	86·44	1280
19	86·42	1270
20	86·26	1160
21	86·17	1110
22	86·16	1110
23	86·16	1110
24	86·16	1110
25	86·16	1110
26	86·14	1100
27	86·06	1040
28	86·05	1040
29	86·04	1040
30	86.14	1100
31	86·15	1100
Approx. Monthly Mean		1200
Normal Mean 1912-1937		1140

Kajnarty (Main Nile)

Day of Month	Gauge Reading m.	Disch. m³. p.s.
2	134·04	1440
3	134·01	1430
4	133·96	1400
5	133·94	1390
6	133·93	1390
10	133·82	1340
11	133·80	1370
12	133·80	1340
13	133·81	1340
16	133·65	1270
17	133·58	1250
18	133·55	1230
19	133·53	1240

Kajnarty (*contd.*)

Day of Month	Gauge Reading m.	Disch. m³. p.s.
20	133·51	1240
23	133·40	1160
24	133·37	1160
25	133·33	1160
26	133·26	1100
27	133·16	1070
28	133·05	1010
30	132·86	970
Approx. Monthly Mean		1250
Normal Mean 1912-1937		1360

Hassanab (Main Nile)

Day of Month	Gauge Reading m.	Disch. m³. p.s.
1	11·48	1300
8	11·34	1240
13	11·27	1180
17	11·10	1000
22	10·94	917
27	11·03	972
Approx. Monthly Mean		1090
Normal Mean 1912-1937		1210

Tamaniat (Main Nile)

Day of Month	Gauge Reading m.	Disch. m³. p.s.
4	11·02	1130
10	10·94	1160
13	10·86	1130
18	10·54	899
24	10·62	975
27	10·58	948
Approx. Monthly Mean		1030
Normal Mean 1912-1937		1190

Soba (Blue Nile)

Day of Month	Gauge Reading m.	Disch. m³. p.s.
3	10·63	293
8	10·50	264
11	10·46	245
16	10·18	209
22	10·03	185
25	10·08	170
Approx. Monthly Mean		220
Normal Mean 1912-1937		269

Hillet Sherif (Blue Nile)

(Old Sennar Gauge)

Day of Month	Gauge Reading m.	Disch. m³. p.s.
1	10·30	266
3	10·27	251
5	10·23	239
8	10·19	233
10	10·15	220
12	10·08	190
15	9·97	163
17	9·97	166
19	9·93	151
22	9·93	155
24	9·93	156
26	9·89	142
29	9·84	134
31	9·84	134
Approx. Monthly Mean		184
Normal Mean 1912-1937		242

Gezira Main Canal

(Kilo 1·3)

Day of Month	Gauge Reading m.	Disch. m³. p.s.
9	16·07	68
9	16·07	71
20	15·98	63
20	15·98	68
Approx. Monthly Mean		67
Normal Mean 1926-1937		48

Roseires (Blue Nile)

Day of Month	Gauge Reading m.	Disch. m³. p.s.
2	12·70	334
4	12·65	322
6	12·60	299
8	12·55	291
10	12·51	281
12	12·47	268
15	12·40	249
17	12·36	243
19	12·32	229
21	12·30	234
23	12·30	231
25	12·27	227
27	12·25	221
29	12·23	215
31	12·20	208
Approx Monthly Mean		259
Normal Mean 1912-1937		289

Mogren (White Nile)

Day of Month	Gauge Reading m.	Disch. m³. p.s.
2	11·52	916
6	11·38	870
9	11·34	933
12	11·26	907
17	10·90	703
23	10·98	787
26	10·96	793
Approx. Monthly Mean		812
Normal Mean 1912-1937		914

Renk (White Nile)

Day of Month	Gauge Reading m.	Disch. m³. p.s.
3	11·56	978
5	11·46	969
7	11·39	929
9	11·32	886
11	11·22	887
13	11·15	813
15	11·06	771
17	10·98	712
19	10·88	695
21	10·82	659
23	10·76	652
25	10·69	635
27	10·65	613
29	10·60	612
Approx. Monthly Mean		775
Normal Mean 1928-1937		884

Malakal (White Nile)

Day of Month	Gauge Reading m.	Disch. m³. p.s.
5	11·24	771
10	11·00	692
16	10·80	648
20	10·68	633
25	10·57	562
30	10·52	612
Approx. Monthly Mean		666
Normal Mean 1912-1937		808

Hillet Doleib (River Sobat)

Day of Month	Gauge Reading m.	Disch. m³. p.s.
1	12·56	262
10	12·06	161
17	11·80	155
25	11·62	125
Approx. Monthly Mean		161
Normal Mean 1912-1937		306

Nasser (River Sobat)

Day of Month	Gauge Reading m.	Disch. m³. p.s.
1	6·62	195
2	6·48	184
3	6·40	176
4	6·33	165
5	6·27	159
6	6·21	156
8	6·09	142
9	6·05	137
10	6·00	135
11	5·95	129
12	5·91	124
13	5·87	118
15	5·75	107
16	5·74	106
17	5·70	103
18	5·68	103
19	5·65	98
20	5·63	98
22	5·61	98
23	5·60	99
24	5·58	95
25	5·57	93
26	5·57	95
27	5·55	94
29	5·54	93
30	5·52	92
31	5·51	92
Approx Monthly Mean		121
Normal Mean 1929-1937		171

Bahr el Zeraf (Kilo. 3)

(Gauge at Mouth)

Day of Month	Gauge Reading m.	Disch. m³. p.s.
16	11·87	157
31	11·71	154
Approx. Monthly Mean		156
Normal Mean 1912-1937		154

Discharges of the Nile during January, 1938 (*contd.*)

(Observed by the Irrigation Department)

Day of Month	Gauge Reading m.	Disch. m^3. p.s.
Bahr el Zeraf (*contd.*)		
(D.S. Tail Cut No. 2)		
(2·3 Kms. D.S.R.P. No. 53)		
(Gauge at Pole 53)		
9	26·60	141
24	26·59	137
Approx. Monthly Mean		139
Normal Mean 1927-1937		141
(D.S. Tail Cut No. 1)		
9	28·26	112
24	28·24	111
Approx. Monthly Mean		112
Abu Tong (White Nile)		
(Tonga Gauge)		
16	12·15	365
31	12·01	344
Approx. Monthly Mean		357
Normal Mean 1923-1937		327
Tonga Cut (at Mouth)		
15	12·16	13
30	12·01	—13
Approx. Monthly Mean		4
White Nile		
(U.S. Barboi Head)		
(Tonga Gauge)		
15	12·16	364
30	12·01	336
Approx. Monthly Mean		347
(U.S. Khor Yergol)		
15	13·76	357
30	13·62	348
Approx. Monthly Mean		349
(U.S. Maya Sinyora)		
(Lake No Gauge)		
14	13·90	355
29	13·84	348
Approx. Monthly Mean		346
(Lake No)		
13	13·91	355
28	13·84	332
Approx. Monthly Mean		340
Normal Mean 1923-1937		309

Day of Month	Gauge Reading m.	Disch. m^3. p.s.
Bahr el Ghazal (at Mouth)		
(Suddite Factory Gauge)		
13	13·92	35
28	13·83	24
Approx. Monthly Mean		29
Normal Mean 1923-1937		16
Bahr el Jebel (Kilo. 3)		
(Lake No Gauge)		
13	13·91	317
28	13·84	320
Approx. Monthly Mean		315
Normal Mean 1923-1937		297
(Buffalo Cape)		
12	11·21	316
Approx. Monthly Mean		320
(D.S. Hillet Nuer)		
10	10·84	353
25	10·83	346
Approx. Monthly Mean		351
(D.S. Tail of Peake's Channel)		
(Head Cut No. 2 Gauge)		
8	26·72	380
23	26·71	383
Approx. Monthly Mean		383
Normal Mean 1927-1937		365
Peake's Channel		
(at Tail)		
(Head Cut No. 2 Gauge)		
17	26·71	114
Approx. Monthly Mean		—
Bahr el Jebel		
(D.S. Head Cut No. 2)		
8	26·72	271
23	26·71	264
Approx. Monthly Mean		268
Normal Mean 1927-1937		237
Jebel-Zeraf Cuts		
(Tail Cut No. 2)		
(Gauge at pole 53)		
9	26·60	13
24	26·59	13
Approx. Mon		13
Normal Mea		23

Day of Month	Gauge Reading m.	Disch. m^3. p.s.
Jebel-Zeraf Cuts (*contd.*)		
(Tail Cut No. 1)		
9	28·26	93
24	28·24	94
Approx. Monthly Mean		94
Normal Mean 1927-1937		79
Head Cut No. 2		
8	26·72	15
23	26·71	16
Approx. Monthly Mean		15
Normal Mean 1927-1937		24
Head Cut No. 1		
8	11·98	99
23	11·97	100
Approx. Monthly Mean		99
Normal Mean 1927-1937		83
Bahr el Jebel		
(U.S. Head Cut No. 1)		
7	11·97	398
22	11·97	393
Approx. Monthly Mean		395
Normal Mean 1927-1937		361
Peake's Channel		
(at Head))		
(Peake's Track No. 1 Gauge)		
18	12·34	78
Approx. Monthly Mean		—
Bahr el Jebel		
(U.S. Head of Peake's Channel)		
(Ghabet el Inderab Gauge)		
7	12·08	508
22	12·08	515
Approx. Monthly Mean		512
(D.S. Lake Nyong)		
7	10·78	567
22	10·76	572
Approx. Monthly Mean		567
(U.S. Lake Nyong)		
7	10·78	486
22	10·76	481
Approx. Monthly Mean		483

Day of Month	Gauge Reading m.	Disch. m^3. p.s.
Bahr el Jebel (*contd.*)		
(D.S. Awai Tail 3)		
5	11·65	571
21	11·64	556
Approx. Monthly Mean		563
(D.S. Awai Tail 1)		
4	11·12	612
20	11·10	600
Approx. Monthly Mean		604
(U.S. Awai Tail 1)		
4	11·12	224
20	11·10	224
Approx. Monthly Mean		223
River Atem		
(At Jonglei)		
(Western Channel)		
18	8·74	140
Approx. Monthly Mean		—
(Eastern Channel)		
18	8·74	296
Approx. Monthly Mean		—
Bahr el Jebel		
(Kenisa)		
3	11·15	307
19	11·10	315
Approx. Monthly Mean		312
(D.S. Khor)		
(2 Kms. U.S.R.P. 104)		
3	11·60	378
19	11·56	376
Approx. Monthly Mean		376
(U.S. Khor)		
(2 Kms. U.S.R.P. 104)		
3	11·60	268
19	11·56	271
Approx. Monthly Mean		268
(D.S. Lake Papin)		
2	11·64	434
17	11·52	410
Approx. Monthly Mean		415

Discharges of the Nile during January, 1938 (*contd.*)

(*Observed by the Irrigation Department*)

Day of Month	Gauge Reading m.	Disch. m³. p.s.
Bahr el Jebel (*Contd.*)		
Lake Papiu (at Mouth)		
2	11·64	278
17	11·52	245
Approx. Monthly Mean		252
Bahr el Jebel		
(U.S. Lake Papiu)		
2	11·64	167
17	11·52	176
Approx. Monthly Mean		173
(U.S.R.P. 114)		
2	11·33	564
17	11·29	533
Appox. Monthly Mean		543
Bahr el Jebel (*Contd.*)		
(At Bor)		
1	11·34	745
16	11·29	732
Approx. Monthly Mean		730
Normal Mean 1912-1937		630
Khor Unyam Kojie		
(At Head)		
(Bor Gauge)		
1	11·34	58
16	11·29	55
Approx. Monthly Mean		55
Normal Mean 1925-1937		27
Bahr el Jebel		
(At Gigging)		
(Western Channel)		
3	29·10	201
15	29·03	195
Approx. Monthly Mean		194
Normal Mean 1931-1937		168
Bahr el Jebel (*Contd.*)		
(At Gemeiza)		
(Eastern Channel)		
2	428·93	676
14	428·86	660
Approx. Monthly Mean		656
Normal Mean 1931-1937		574
(At Terrakekka)		
1	13·41	887
14	13·35	869
Approx. Monthly Mean		862
Normal Mean 1931-1937		748
(At Mongalla)		
1	11·94	885
7	11·91	877
13	11·87	870
19	11·84	852
25	11·83	860
Approx. Monthly Mean		865
Normal Mean 1912-1937		740

Occasional Discharges

(Observed by the Irrigation Department)

Date	River	Site	Gauge Reading M.	Gauge Site	Disch. m³. p.s.
		River Sobat ~~and~~ Tributaries			
1-1-1938	Khor Fullus	Mouth	12.56	H.Doleib	
17-1-1938	,,	,,	11.80	,,	
		White Nile Tributaries			
16-1-1938	Khor Attar	Mouth	11.65	Fenikang	0
31-1-1938	,,	,,	11.43	,,	0
15-1-1938	Khor Yergol	,,	13.76	Khor Yergol	0
30-1-1938	,,	,,	13.62	,,	0
14-1-1938	Outlet on L. Bank	Mouth ; 200 mts. U.S.R.P. No. 6	13.76	,,	1
29-1-1938	,,	,, ,, ,, ,, 6	13.63	,,	0
14-1-1938	Maya Sinyora	,,	13.90	Lake No	0
29-1-1938	,,	,,	13.84	,,	0
		Bahr el Ghazal			
12-1-1938	Ghazal	D.S. Khor Doleib	13.92	Saddle Factory	0
27-1-1938	,,	,, ,, ,,	13.84	,,	0
		Bahr el Jebel and Tributaries			
12-1-1938	Jebel	About 2 Kms. D.S. Pole 17	11.21	Buffalo Cape	332
17-1-1938	Peake's Channel	Site No. 2 ; 5Kms. U.S. Tail	26.71	Head Cut 2	119
17-1-1938	,,	,, ,, 3	26.71	,,	101
18-1-1938	,,	,, ,, 4	11.94	~~Peake's~~ No. 5	92
		Spills on the Bahr el Jebel			
		(Negative discharges denote Spills Out)			
23-1-1938	Spill in on L. Bank	At Kilo 569.250	11.48	L. Papiu	13
16-1-1938	,,	,, ,, 612.200	11.29	Bor	74
23-1-1938	Spill out on L. Bank	,, ,, 576.200	11.48	L. Papiu	0*
23-1-1938	,,	,, ,, 576.450	11.48	,,	—2*
23-1-1938	,,	,, ,, 576.800	11.48	,,	—1*
23-1-1938	,,	,, ,, 576.900	11.48	,,	—2*
23-1-1938	,,	,, ,, 577.100	11.48	,,	—10
23-1-1938	,,	,, ,, 577.300	11.48	,,	—2*
23-1-1938	,,	,, ,, 578.500	11.48	,,	—3*
23-1-1938	,,	,, ,, 579.100	11.48	,,	—10
23-1-1938	,,	,, 579.400	11.48	,,	—1*
23-1-1938	,,	,, 590.500	11.28	R.P. 114	—18
24-1-1938	,,	,, ,, 594.800	—	—	—5*
24-1-1938	,,	,, ,, 596.300	—	—	0*
24-1-1938	,,	,, ,, 596.600	—	—	—6
24-1-1938	,,	,, ,, 596.700	—	—	—9
24-1-1938	,,	,, ,, 596.900	—	—	—3*
24-1-1938	,,	,, ,, 597.200	—	—	—7
24-1-1938	,,	,, ,, 597.300	—	—	—2*
24-1-1938	,,	,, ,, 598.200	—	—	—1*
24-1-1938	,,	,, ,, 598.800	—	—	—2*
24-1-1938	,,	,, ,, 602.500	—	—	—1*
24-1-1938	,,	,, ,, 611.900	—	—	—5*
24-1-1938	,,	,, ,, 620.200	—	—	—8
25-1-1938	,,	,, ,, 623.000	11.26	Bor	—2*

Occasional Discharges (*contd.*)

(*Observed by the Irrigation Department*)

Date	River	Site	Gauge		Disch. m^3 p.s.
			Reading	Site	
			M.		
		Spills on the Bahr el Jebel (*contd.*)			
25-1-1938	Spill out on L. Bank	At Kilo 623·500	11.26	Bor	—1*
25-1-1938	,,	,, ,, 626·500	11.26	,,	—1*
25-1-1938	,,	,, ,, 626·800	11.26	,,	—3*
25-1-1938	,,	,, ,, 632·200	11.26	,,	—3*
25-1-1938	,,	,, ,, 633·600	11.26	,,	—2*
26-1-1938	,,	,, ,, 637·150	11.26	,,	—7
26-1-1938	,,	,, ,, 639·200	20.90	Malek	—1*
26-1-1938	,,	,, ,, 646·050	20.90	,,	—1*
26-1-1938	,,	,, ,, 648·900	20.90	,,	—3*
26-1-1938	,,	,, ,, 649·100	20.90	,,	—2*
26-1-1938	,,	,, ,, 656·250	20.90	,,	—5*
27-1-1938	,,	,, ,, 677·000	11.76	Tombe	—1*
27-1-1938	,,	,, ,, 681·400	11.76	,,	—1*
27-1-1938	,,	,, ,, 682.700	11.76	,,	—13
16-1-1938	,,	,, ,, Atem Head No. 1, 100 mts. D.S. Head ...	11.29	R.P. 114	—31

* These discharges were obtained from one current meter observation of the Surface Velocity in the middle of the stream.

Y. M. Simaika

Director, Hydrological Service.

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Ministry of Public Works, Egypt.—Physical Department

REPORT ON THE WEATHER AND STATE OF THE RIVER FOR MARCH, 1938

The Weather

Abnormally cool. Although lower temperatures were registered in March 1933, this was on the average the coldest March since 1921. There was an almost complete absence of khamsin depressions.

The cold wave experienced at the end of February continued into March. Record low temperatures for March were established at Luxor, Suez and Kharga Oasis.

At the beginning of the month the passage of a depression off the Delta caused strong cold northerly winds and heavy rain near the coast, while light showers occurred as far south as the Fayum.

Egypt again came under the influence of a depression on the 4th and showers were general in the next two days. A high pressure system was then established, and cool fine weather was experienced for over a week.

On the 14th depressions were centred north of Egypt and in the western desert. During their passage eastwards the weather was much disturbed and unusually cold. From the 14th to the 18th rain was widespread and was especially heavy in the east, 17 millimetres falling at port Said on the 15th, and 56 millimetres at El Arish during 15th–18th.

On the 20th a depression was situated over the interior of Libya, giving rise to easterly winds and mild khamsin weather in Egypt and for the first time for almost a month the temperature reached the normal value for the time of year. With its passage the temperature fell, but a following depression brought warmer weather on the 28th, when the temperature in Cairo reached 30°C (86°F). A rapid and large fall of temperature followed, and on the 31st the temperature in Cairo did not rise above 20°C (68°F), this being the coldest last day of March for twenty years.

For the month as a whole the barometric pressure was everywhere above normal and the temperature much below normal, except in the southern Sudan.

Rainfall was well above normal along the Mediterranean coast.

TABLE SHOWING THE DEPARTURE FROM NORMAL FOR MARCH 1938

DISTRICTS	BAROMETRIC PRESSURE		TEMPERATURE						RAINFALL	
			MAXIMUM		MINIMUM		MAX.+MIN.÷2			
	1938	Difference from Normal	1938	Difference from Normal	1938	Difference from Normal	1938	Difference from Normal	1938	Difference from Normal
	m.b.	m.b.	°C.	°C.	°C.	°C.	°C.	°C.	mm.	mm.
I. Mediterranean	1017·5	+1·6	19·1	—1·7	11.6	—0·5	15·4	—1·1	24	+13
II. Lower Egypt	1017·7	+1·5	21·3	—2·8	7·4	—1·5	14·4	—2·2	5	—1
III. Middle Egypt	1018·0	+1·7	21·7	—2·4	8·9	—1·6	15·3	—2·0	1	—3
IV. Upper Egypt	1017·7	+1·9	24·7	—3·3	9·1	—1·8	16·9	—2·6	0	—
V. Western Desert ...	1018·8	+2·5	24·2	—3·6	8·6	—1·1	16·4	—2·4	0	—
VI. Red Sea (Egypt) ...	1015·9	+1·3	22·9	—2·1	12·4	—1·6	17·6	—1·8	0	0
*VII. Red Sea (Sudan) ...	1013·4	+0·4	27·2	—1·5	18·3	—1·4	22·8	—1·4	0	—1
VIII. North Sudan	1013·1	+1·4	32·7	—3·1	15·1	—1·8	23·9	—2·4	0	0
IX. Central Sudan... ...	1010·4	+0·5	36·1	—1·5	16·3	—0·9	26·2	—1·2	0	—1
X. South Sudan	1008·6	—0·6	38·0	0·0	22·4	+1·0	30·2	+0·5	9	—12

*Port Sudan only.

L. J. SUTTON,
Director, Meteorological Service.

State of the River

Lake Albert at Butiaba fell 9 cms. during the month. Its level on April 1st. 1938 was 60 cms. above the normal and 48 cms. above that of the corresponding day of last year.,

The Bahr el Jebel at Juba fell slightly during the month. The levels were practically identical with the normal and above those of last year.

The river Sobat at Nasser had a sharp rise in the middle of the month but fell again afterwards. The levels were on the average considerably above both the normal and last year's.

The White Nile at Malakal was almost steady for the first fortnight, then rose until the 20th. and fell slowly thereafter. On the average the levels were a little above normal but above last year's throughout the month. At Gebel Aulia the White Nile rose until the 10th. then fell sharply until the 18th and slowly thereafter. The levels were above last year's during the whole month. The emptying of the Reservoir which started on February 4th ended on March 19th.

The Blue Nile at Roseires fluctuated above normal during the month. The levels were on the average about the same as last year's. At Khartoum the Blue Nile rose until the 10th. then fell until the 20th. and ro e again slowly until the end of the month. On the average the levels were a little above both the normal and last year's.

The Main Nile at Kajnarti fell slowly until the 17th. then rose until the 24th. and fell more rapidly thereafter. The levels were above normal and much above those of last year.

The differences of the mean levels in March 1938 from those of March 1937 and from the the normal of 1906–1935 were :—

STATION	MEAN DIFFERENCES OF LEVELS	
	March 1938 Minus March 1937	March 1938 Minus Normal
	Metre	Metre
Juba	+ 0·19	+ 0·04
Nasser	+ 0·33	+ 0·23*
Malakal	+ 0·17	+ 0·05
Roseires	+ 0·03	+ 0·41
Khartoum	+ 0·16	+ 0·10
Kajnarti	+ 0·55	+ 0·22

* Nasser normal is for 1922-1935 only.

Y. M. SIMAIKA
Director, Hydrological Service.

Govt. Press 15,721-1937-250 ex.

February River Discharges missing.

Ministry of Public Works, Egypt.—Physical Department

Discharges of the Nile during March, 1938

(Observed by the Irrigation Departemen')

Esna (Main Nile)

(Kilo. 2.8 D.S. Barrage)

Day of Month	Gauge Reading m.	Disch. m³. p.s.
2	72·28	838
10	72·28	808
17	72·22	793
24	72·20	783
pprox. Monthly Mean		804
ormal Mean 1933-1937		831

Aswan

(Measured by Sluices)

(Aswan D.S. Gauge)

Day of Month	Gauge Reading m.	Disch. m³. p.s.
1	85·75	892
2	85·74	891
3	85·74	891
4	85·74	891
5	85·73	891
6	85·74	891
7	85·74	891
8	85·74	891
9	85·74	890
10	85·75	890
11	85·71	867
12	85·71	868
13	85·71	868
14	85·70	868
15	85·70	867
16	85·74	865
17	85·74	869
18	85·73	866
19	85·74	868
20	85·73	870
21	85·69	845
22	85·68	846
23	85·68	845
24	85·68	846
25	85·68	845
26	85·68	845
27	85·68	845
28	85·68	845
29	85.67	845
30	85.67	844
31	85.68	845
pprox. Monthly Mean		867
ormal Mean 1912-1937		779

Kajnarty (Main Nile)

Day of Month	Gauge Reading m.	Disch. m³. p.s.
1	132·62	872
2	132·62	885
3	132·59	865
4	132·57	861
5	132·57	855
6	132·58	866
7	132·58	856
8	132·54	862
9	132·52	847
10	132·46	813
11	132·44	789
12	132·45	777
13	132·46	782
14	132·46	801
16	132·44	787
17	132·41	766
18	132·45	815

Kajnarty (*contd.*)

Day of Month	Gauge Reading m.	Disch. m³. p.s.
19	132·47	823
21	132·52	864
22	132·57	877
23	132·62	891
24	132·61	894
25	132·58	869
26	132·48	840
27	132·38	791
28	132·31	786
29	132·26	755
30	132·21	747
31	132·15	732
Approx. Monthly Mean		826
Normal Mean 1912-1937		729

Hassanab (Main Nile)

Day of Month	Gauge Reading m.	Disch. m³. p.s.
1	10·87	891
7	10·85	882
12	10·93	914
19	10·69	730
24	10·57	654
28	10·56	663
Approx. Monthly Mean		789
Normal Mean 1912-1937		698

Tamaniat (Main Nile)

Day of Month	Gauge Reading m.	Disch. m³. p.s.
3	10·40	807
8	10·51	939
14	10·30	760
21	10·06	650
24	10·07	689
28	10·10	735
Approx. Monthly Mean		767
Normal Mean 1912-1937		708

Soba (Blue Nile)

Day of Month	Gauge Reading m.	Disch. m³. p.s.
1	9·89	144
6	9·91	142
12	9·85	137
20	9·76	150
22	9·78	156
26	9·94	194
Approx. Monthly Mean		156
Normal Mean 1912-1937		153

Hillet Sherif (Blue Nile)

(Old Sennar Gauge)

Day of Month	Gauge Reading m.	Disch. m³. p.s.
2	9·84	138
5	9·84	137
7	9·83	136
9	9·83	132
12	9·93	161
14	9·93	158
16	9·92	156
19	9·91	158
21	10·07	205
21	10·07	206
23	10·07	200
26	10·05	196
28	10·04	194
30	9·69	106
Approx. Monthly Mean		159
Normal Mean 1912-1937		152

Gezira Main Canal

(Kilo. 1.3)

Day of Month	Gauge Reading m.	Disch. m³. p.s.
8	416·17	71
8	416·17	71
17	416·15	73
17	416·15	71
Approx. Monthly Mean		71
Normal Mean 1926-1937		54

Roseires (Blue Nile)

Day of Month	Gauge Reading m.	Disch. m³. p.s.
2	11·81	137
4	11·84	131
6	11·84	143
8	11·82	144
10	11·80	137
12	11·80	135
14	11·83	144
17	12·12	199
19	12·07	182
21	11·94	159
23	11·82	140
25	11·72	129
27	11·67	118
29	11·62	111
31	11·57	106
Approx Monthly Mean		142
Normal Mean 1912-1937		132

Mogren (White Nile)

Day of Month	Gauge Reading m.	Disch. m³. p.s.
2	10·76	678
7	10·84	738
13	10·70	666
20	10·39	505
23	10·43	520
27	10·45	501
Approx. Monthly Mean		603
Normal Mean 1912-1937		557

Gebel Aulia (White Nile)

(5 Kms. D.S. Dam.)

Day of Month	Gauge Reading m.	Disch. m³. p.s.
11	371·42	708
12	371·34	670
13	371·25	633
15	371·12	606

Renk (White Nile)

Day of Month	Gauge Reading m.	Disch. m³. p.s.
2	10·28	551
7	10·24	528
12	10·24	550
17	10·22	533
22	10·24	541
27	10·28	568
Approx. Monthly Mean		546
Normal Mean 1928-1937		550

Malakal (White Nile)

Day of Month	Gauge Reading m.	Disch. m³. p.s.
1	10·23	520
5	10·23	499
10	10·25	533
15	10·23	507
20	10·34	560
25	10·33	539
30	10·23	541
Approx. Monthly Mean		529
Normal Mean 1912-1937		573

Hillet Doleib (River Sobat)

Day of Month	Gauge Reading m.	Disch. m³. p.s.
4	11·28	69
10	11·27	67
17	11·27	69
25	11·36	78
Approx. Monthly Mean		70
Normal Mean 1912-1937		111

Nasser (River Sobat)

Day of Month	Gauge Reading m.	Disch. m³. p.s.
1	5·02	56
2	5·04	57
3	5·08	60
5	5·18	68
6	5·22	70
7	5·19	67
8	5·18	66
9	5·17	67
10	5·13	65
12	5·18	69
13	5·21	70
14	5·32	80
15	5·59	102
16	5·73	119
17	5·73	120
19	5·69	113
20	5·58	101
21	5·48	97
22	5·44	94
23	5·38	86
24	5·25	80
26	5·20	69
27	5·15	66
28	5·13	64
29	5·12	63
30	5·08	62
31	5·04	56
Approx Monthly Mean		78
Normal Mean 1929-1937		62

Bahr el Zeraf (Kilo. 3)

(Gauge at Mouth)

Day of Month	Gauge Reading m.	Disch. m³. p.s.
3	11·56	143
16	11·54	138
31	11·52	137
Approx. Monthly Mean		139
Normal Mean 1912-1937		140

(D.S. Tail Cut No. 2)

(2.3 Kms. D.S.R.P. No. 53)

(Gauge at Pole 53)

Day of Month	Gauge Reading m.	Disch. m³. p.s.
9	26·58	136
24	26·55	131
Approx. Monthly Mean		133
Normal Mean 1927-1937		125

(D.S. Tail Cut No. 1)

Day of Month	Gauge Reading m.	Disch. m³. p.s.
9	28·22	111
24	28·19	111
Approx. Monthly Mean		110

Discharges of the Nile during March, 1938 (*contd.*)

(Observed by the Irrigation Department)

Day of Month	Gauge Reading m.	Disch. m³. p.s.
Abu Tong (White Nile)		
(Tonga Gauge)		
3	11·86	326
16	11·84	328
31	11·81	328
Approx. Monthly Mean		328
Normal Mean 1923-1937		316
Tonga Cut (at Mouth)		
3	11·86	0
15	11·84	—10
30	11·83	0
Approx. Monthly Mean		—4
White Nile		
(U.S. Barboi Head)		
(Khor Yergol Gauge)		
2	13·52	338
15	13·51	338
30	13·48	341
Approx. Monthly Mean		339
(U.S. Khor Yergol)		
2	13·52	333
15	13·52	335
30	13·48	336
Approx. Monthly Mean		335
(U.S. Maya Sinyora)		
(Lake No Gauge)		
1	13·74	336
14	13·74	336
29	13·7[illegible]	334
Approx. Monthly Mean		335
(At Lake No)		
13	13·74	325
28	13·71	336
Approx. Monthly Mean		328
Normal Mean 1923-1937		319
Bahr el Ghazal		
(At Mouth)		
(Suddite Factory Gauge		
13	13·74	22
28	13·71	13
Approx. Monthly Mean		18
Normal Mean 1923-1937		16

Day of Month	Gauge Reading m.	Disch. m³. p.s.
Bahr el Jebel (at Kilo. 3)		
(Lake No Gauge)		
13	13·74	309
28	13·71	325
Approx. Monthly Mean		315
Normal Mean 1923-1937		306
(At Buffalo Cape)		
12	11·13	331
27	11·11	327
Approx. Monthly Mean		329
(D.S. Hillet Nuer)		
10	10·82	352
25	10·80	314
Approx. Monthly Mean		349
(D.S. Tail of Peake's Channel)		
(Head Cut No. 2 Gauge)		
8	26·69	362
23	26·68	376
Approx. Monthly Mean		370
Normal Mean 1927-1937		342
(D.S. Head Cut No. 2)		
8	26·69	256
23	26·68	265
Approx. Monthly Mean		261
Normal Mean 1927-37		234
Jebel-Zeraf Cuts		
(At Tail Cut No. 2)		
(Gauge at Zeraf Pole 53)		
9	26·58	13
24	26·55	15
Approx. Monthly Mean		14
Normal Mean 1927-1937		24
(At Tail Cut No. 1)		
9	28·22	102
24	28·19	103
Approx. Monthly Mean		102
Normal Mean 1927-1937		89
(At Head Cut No. 2)		
8	26·69	14
23	26·68	16
Approx. Monthly Mean		15
Normal Mean 1927-1937		25
(At Head Cut No. 1)		
8	11·94	104
23	11·92	105
Approx. Monthly Mean		105
Normal Mean 1927-1937		90

Day of Month	Gauge Reading m.	Disch. m³. p.s.
Bahr el Jebel		
(U.S. Head Cut No. 1)		
7	11·95	390
22	11·92	395
Approx. Monthly Mean		392
Normal Mean 1927-1937		357
(U.S. Head of Peake's Channel)		
(Ghabet el Inderab Gauge)		
7	12·06	492
22	12·04	496
Approx. Monthly Mean		493
(D.S. Lake Nyong)		
7	10·72	523
22	10·70	542
Approx. Monthly Mean		533
(U.S. Lake Nyong)		
7	10·72	458
22	10·70	455
Approx. Monthly Mean		455
(D.S. Awai Tail 3)		
6	11·61	523
21	11·59	548
Approx. Monthly Mean		537
(D.S. Awai Tail 1)		
5	11·10	573
20	11·09	556
Approx. Monthly Mean		563
(U S. Awai Tail 1)		
5	11·10	202
20	11·09	205
Approx. Monthly Mean		204
River Atem		
(At Jonglei)		
(Western Channel)		
3	8·55	116
18	8·51	116
Approx. Monthly Mean		115
Normal Mean 1927-1937		96

Day of Month	Gauge Reading m.	Disch. m³. p.s.
River Atem (*contd.*)		
(At Jonglei)		
(Eastern Channel)		
3	8·55	242
18	8·51	227
Approx. Monthly Mean		232
Normal Mean 1932-1937		216
Bahr el Jebel		
(At Kenisa)		
5	11·04	301
19	11·03	300
Approx. Monthly Mean		300
(D.S. Khor)		
(2 Kms. U.S.R.P. 104)		
4	11·48	353
19	11·48	358
Approx. Monthly Mean		356
(D.S. Lake Papiu)		
2	11·34	369
17	11·29	371
Approx. Monthly Mean		368
Lake Papiu		
(At Mouth)		
2	11·34	202
17	11·29	198
Approx. Monthly Mean		196
Bahr el Jebel		
(U.S. Lake Papiu)		
2	11·34	178
17	11·29	181
Approx. Monthly Mean		180
(U.S.R.P. No. 114)		
2	11·23	508
17	11·21	516
Appox. Monthly Mean		513
(At Bor)		
1	11·19	688
16	11·16	669
Approx. Monthly Mean		678
Normal Mean 1912-1937		583

Discharges of the Nile during March, 1938 (*contd.*)

(Observed by the Irrigation Department)

Day of Month	Gauge Reading m.	Disch. m^3. p.s.
Khor Unyam Kojie		
(At Head)		
(Bor Gauge)		
1	11·19	53
16	11·16	52
Approx. Monthly Mean		52
Normal Mean 1925-1937		23
Bahr el Jebel		
(At Gigging)		
(Western Channel)		
3	28·84	169
15	28·81	169
Approx. Monthly Mean		168
Normal Mean 1931-1937		154
Bahr el Jebel (*contd.*)		
(At Gemeiza)		
(Eastern Channel)		
2	428·71	629
14	428·68	591
Approx. Monthly Mean		600
Normal Mean 1931-1937		548
(At Terrakekka)		
1	13·17	789
13	13·13	780
Approx. Monthly Mean		775
Normal Mean 1931-1937		702
(At Mongalla)		
1	11·71	797
7	11·68	773
13	11·67	780
19	11·67	775
25	11·66	778
Approx. Monthly Mean		777
Normal Mean 1912-1937		670
River Assua		
(At Mouth)		
6	0·85	0
7	0·84	0
Approx. Monthly Mean		—
Normal Mean 1924-1937		9
Bahr el Jebel		
(At Meshra Surrour)		
Feb. 28	8·93	792
Mar. 1	8·93	778
2	8·92	783
3	8·92	768
4	8·92	758
5	8·91	759
Approx. Monthly Mean		—
Normal Mean 1914-1937		654
River Unyama		
(At Mouth)		
Feb. 28	10·69	0
Mar. 1	10·69	0
2	10·68	0
3	10·68	0
4	10·68	0
5	10·67	0
Approx. Monthly Mean		—

Occasional Discharges

(Observed by the Irrigation Department)

Date	River	Site	Gauge		Disch. m³. p.s.
			Reading	Site	
			M.		
		River Sobat Tributaries			
4-3-1938	Khor Fullus	Mouth	11.28	H.Doleib	
17-3-1938	,,	,, ...	11.27	,,	
		White Nile Tributaries			
3-3-1938	Khor Attar	Mouth	11.23	Fenikang	
16-3-1938	,,	,, ...	11.21	,,	
31-3-1938	,,	,, ...	11.20	,,	
2-3-1938	Khor Yergol	,, ...	13.52	Khor Yergol	
15-3-1938	,,	,, ...	13.50	,,	
30-3-1938	,,	,, ...	13.48	,,	
1-3-1938	Outlet on L. Bank	,, ; 200 mts. U.S.R.P. No. 6	13.51	,,	
14-3-1938	,,	,, ,, ,, ,, ,, ...	13.50	,,	
29-3-1938	,,	,, ,, ,, ,, ,, ...	13.48	,,	
1-3-1938	Maya Sinyora	,, ...	13.74	Lake No	
14-3-1938	,,	,, ...	13.74	,,	
29-3-1938	,,	,, ...	13.71	,,	
		Bahr el Ghazal			
12-3-1938	Ghazal	D.S. Khor Doleib	13.74	Suddite Factory	
27-3-1938	,,	,, ,, ...	13.71	,,	
		Spills on the Bahr el Jebel			
16-3-1938	Spill Out on R. Bank	Atem Head No. 1, 100 mts. D.S. Head	—	—	—27

Y. M. Simaika,

Director, Hydrological Service.

Govt. Press 16,290-1937-250 ex.

Ministry of Public Works, Egypt.—Physical Department

REPORT ON THE WEATHER AND STATE OF THE RIVER FOR APRIL, 1938

The Weather

The weather during April was subject to rapid changes of temperature usual at this time of year. The first half of the month was abnormally cool, while two pronounced heat waves occurred in the second half.

Cool northerly winds prevailed at the beginning of the month but the passage of a depression along the coast brought warm dull weather; there was thick fog on the morning of the 5th and light scattered showers occurred, including 4 millimetres of rain at Siwa Oasis.

Cool weather followed, and with the exception of two short breaks, lasted for a fortnight. The passage of a depression on the 16th gave rise to winds of gale force and severe duststorms. At Salum and Alexandria velocities of 80 kilometres per hour were recorded. On the following day the temperature in Cairo did not rise above 24° C (75° F), but with the approach of a depression along the northern Mediterranean and a secondary over the interior of Libya, the weather became gradually warmer until the 21st, when the temperature rose to 36° C (97° F) in Cairo, (7° C above normal). Within two days the temperature fell to normal but approaching depressions, one of which passed over the Delta, again brought a heat wave, which was more severe, culminating on the 26th with temperatures of 40° C (104° F) in Cairo (10° C above normal) and 46° C (115° F) at Aswan. In Lower Egypt the temperature then fell rapidly for some days, but in Upper Egypt the hot weather was prolonged owing to the presence of shallow depressions in that region, record temperatures for April being recorded on the 28th at Kharga (47° C), Qena and Luxor.

For the month as a whole the barometric pressure was below normal throughout Egypt and the Sudan, while the temperature was slightly below normal in Lower and Middle Egypt, and above normal elsewhere, particularly in the central Sudan. Relative humidity was above normal both in Alexandria and in Cairo. Rainfall was below normal except in the central and southern Sudan.

TABLE SHOWING THE DEPARTURE FROM NORMAL FOR APRIL 1938

DISTRICTS	BAROMETRIC PRESSURE		TEMPERATURE						RAINFALL	
			MAXIMUM		MINIMUM		MAX.+MIN./2			
	1938	Difference from Normal	1938	Difference from Normal	1938	Difference from Normal	1938	Difference from Normal	1938	Difference from Normal
	m.b.	m.b.	°C.	°C.	°C.	°C.	°C.	°C.	mm.	mm.
I. Mediterranean	1014·0	—0·2	22·7	—0·6	14·5	+0·1	18·6	—0·2	0	—4
II. Lower Egypt	1014·0	—0·9	27·3	—0·6	11·7	+0·2	19·5	—0·2	0	—3
III. Middle Egypt	1013·6	—0·8	28·5	+0·2	13·0	—0·2	20·8	0·0	0	—2
IV. Upper Egypt	1012·5	—1·2	32·8	+0·1	15·4	+0·5	24·1	+0·3	0	—
V. Western Desert ...	1013·7	—0·2	31·8	—0·5	14·6	+1·0	23·2	+0·2	1	—
VI. Red Sea (Egypt) ...	1011·5	—0·9	27·7	—0·3	17·5	+0·4	22·6	0·0	0	0
*VII. Red Sea (Sudan) ...	1009·7	—1·4	32·1	+0·6	21·8	+0·4	27·0	+0·5	0	—1
VIII. North Sudan	1007·5	—1·9	41·1	+1·6	22·3	+1·8	31·7	+1·7	0	—1
IX. Central Sudan... ...	1006·0	—2·1	42·0	+1·9	23·2	+2·9	32·6	+2·4	11	+6
X. South Sudan	1007·9	—1·4	36·7	—0·5	23·4	+1·0	30·0	+0·2	86	+16

*Port Sudan only.

L. J. SUTTON,
Director, Meteorological Service.

State of the River

Lake Albert at Butiaba rose 1 cm. during the month. Its level on May 1st 1938 was 62 cms. above the normal and 39 cms. above that of the corresponding day of last year.

The Bahr el Jebel at Juba fluctuated about the normal and last year's levels throughout the month.

The fall on the River Sobat at Nasser which set in last month continued for the first 5 days of the month then the river began to rise and reached normal level on the 18th. although this was not maintained, the rise was again normal at the end of the month.

The White Nile at Malakal was practically normal during the month the levels being continuously above those of last year.

The Blue Nile at Roseires fluctuated about last year's levels and a little above normal during the month. At Khartoum the Blue Nile also fluctuated about last year's levels but was on the average about 25 cms. below normal.

The Main Nile at Kajnarti fell slowly with small fluctuations. On the average the levels were normal and about 20 cms. above last year's.

The differences of the mean levels in April 1938 from those of April 1937 and from the normal 1906–35 were :—

STATION	MEAN DIFFERENCES OF LEVELS	
	April 1938 Minus April 1937	April 1938 Minus Normal
	Metre	Metre
Juba	+ 0·02	— 0·63
Nasser	+ 0·30	— 0·22*
Malakal	+ 0·26	+ 0·05
Roseires	— 0·03	+ 0·10
Khartoum	+ 0·04	— 0·26
Kajnarti	+ 0·18	0·00

* Nasser normal is for 1922-1935 only.

Y. M. SIMAIKA
Director, Hydrological Service.

April River Discharges missing

Ministry of Public Works, Egypt.—Physical Department

REPORT ON THE WEATHER AND STATE OF THE RIVER FOR MAY, 1938

The Weather

Cooler than usual. The chief features were three heat waves of moderate intensity alternating with two pronounced cool spells, and a gale of exceptional severity but of short duration.

On the afternoon of the 2nd a depression from the western desert crossed the Delta. In advance there were widespread but light showers, and its approach was accompanied by hot southeast winds, the temperature rising in Cairo to 37°C. (99°F) and at Aswan to 43° C. (109° F.). The cold front of this depression reached Cairo shortly before 16 h, with a northerly wind of exeeptional violence, and a dust storm which however ceased within an hour. The barometric pressure rose 9 millibars between 16 and 18 h., while the temperature fell from 35° C. to 25° C. in the same period. At Helwan the wind velocity reached 122 kilometres per hour, by far the highest on record since the foundation of the Observatory in 1904 (the previous record was 103 K.P.H. in May 1936. That for Alexandria is 119 K.P.H., in January 1908, while at Saloum 122 K.P.H. was registered in March 1934).

Structural damage was reported from different localities. The wind was much less severe near the coast and at Alexandria reached only 55 K.P.H.

Following the rapid passage of the depression to the northeast, high pressure was established west of Egypt, and cool northerly winds prevailed, the maximum temprature in Cairo on the 3rd. and 4th. being only 26° C. (79° F.).

Subsequently northeast winds prevailed and the weather became gradually warmer until the 11th, when with the eastward passage of a trough of low pressure over the Mediterranean the temperature again rose to 37° C. in Cairo (5° C above normal) and 43° C at Aswan.

A steady fall in temperature followed, providing a markedly cool spell, so that on the 16th. and 17th. with air reaching Egypt from Greece. temperatures generally fell to 7° C. below normal.

The weather then again became steadily warmer with northeast winds, owing to the approach of a low-pressure system, and on the 23rd. the temperature in Cairo reached 39° C. (102° F.), after which the temperature fell to the normal value by the 26th.

These three heat waves were much less pronounced on the coast than inland.

For the month as a whole the barometric pressure was well above normal in Egypt and below in the Sudan. Except in the central Sudan the temperature was everywhere below normal, especially in Lower Egypt. Relative humidity was below normal in Cairo and slightly so in Alexandria.

Rainfall in Egypt was almost negligible, the heaviest shower being 2 mms. at Port-Said, on the 2nd. In the Sudan rainfall was in defect except in the extreme south, where it was appreciably above normal.

TABLE SHOWING THE DEPARTURE FROM NORMAL FOR MAY, 1938

DISTRICTS	BAROMETRIC PRESSURE		TEMPERATURE						RAINFALL	
			MAXIMUM		MINIMUM		MAX.+MIN./2			
	1938	Difference from Normal	1938	Difference from Normal	1938	Difference from Normal	1938	Difference from Normal	1938	Difference from Normal
	m.b.	m.b.	°C.	°C.	°C.	°C.	°C.	°C.	mm.	mm.
I. Mediterranean	1014·6	+1·2	24·8	—1·1	16·9	—0·4	20·8	—0·8	1	—1
II. Lower Egypt	1014·6	+0·6	30·8	—1·3	14·0	—1·4	22·4	—1·4	0	—2
III. Middle Egypt	1014·2	+1·1	31·8	—0·4	15·8	—1·0	23·8	—0·7	0	—1
IV. Upper Egypt	1012·2	+0·2	36·1	—0·2	18·9	—0·2	27·5	—0·2	0	—
V. Western Desert ...	1013·3	+1·0	36·8	—1·2	20·9	+1·5	28·8	+0·2	0	—
VI. Red Sea (Egypt) ...	1010·7	—0·4	31·0	—0·5	21·4	+0·3	26·2	—0·1	0	0
*VII. Red Sea (Sudan) ...	1008·2	—1·3	35·5	+0·5	22·2	—1·6	28·8	—0·6	0	—1
VIII. North Sudan	1007·7	—0·9	41·7	+0·2	23·8	—0·3	32·8	0·0	0	—4
IX. Central Sudan... ...	1007·0	—1·7	41·4	+1·5	22·9	+0·4	32·2	+1·0	16	—5
X. South Sudan	1009·3	—1·5	34·3	—0·6	22·5	+0·5	28·4	0·0	160	+38

*Port Sudan only.

L. J. SUTTON,
Director, Meteorological Service.

State of the River

Lake Albert at Butiaba fell 2 cms. during the month. Its level on June 1st 1938 was 55 cms. above the normal and 25 cms. above that of the corresponding day of last year.

The Bahr el Jebel at Juba fluctuated about the normal with two peaks on the 2nd and 12th. 43 and 55 cms. respectively above the normal.

The River Sobat at Nasser rose slower than normally the levels being on the average considerably below both the normal and last year's.

The White Nile at Malakal rose rather slower than normally the levels which were a little above normal at the beginning being normal at the end of the month.

The Blue Nile at Roseires rose, with sharp fluctuations, slower than normally. On the average the levels were about 10 cms. below normal and about 35 cms. below those of last year. At Khartoum the Blue Nile rose slowly the levels being on the average about the same as last year's, and about 25 cms. below normal.

The Main Nile at Kajnarti continued to fall until the 19th. and then bgan to rise slowly. The levels on the average were about the same as last year's but almost 40 cms. below the normal.

The differences of the mean levels in May 1938 from those of May 1937 and from the normal 1906-35 were :—

STATION	Mean Differences of Levels	
	May 1938 Minus April 1937	May 1938 Minus Normal
	Metre	Metre
Juba	— 0·14	— 0·03
Nasser	— 0·44	— 0·35*
Malakal	+ 0·08	+ 0·06
Roseires	— 0·36	— 0·12
Khartoum	— 0·04	— 0·24
Kajnarti	+ 0·07	— 0·38

* Nasser normal is for 1922-1935 only.

Y. M. Simaika
Director, Hydrological Service.

Govt. Press 1853-1938-250 ex.

May River Discharges missing.

Ministry of Public Works, Egypt.—Physical Department

REPORT ON THE WEATHER AND STATE OF THE RIVER FOR JUNE, 1938

The Weather

Settled summer conditions were established earlier than usual this year, and there was a complete absence of khamasin or heat waves during the month, the temperature being continuously within a degree or two of the normal. The highest temperature recorded in Cairo was only 38° C (100° F), or 3° C above normal, towards the end of the month.

A pronounced cool spell, with fresh northwesterly winds, was experienced from the 17th to 21st, and in some localities temepratures were as much as 6° C below the normal for the time of the year.

Except over the western Desert and the Northern Sudan the barometric pressure for the month as a whole was everywhere slightly below normal while the temperature was appreciably below normal except in the central and southern Sudan. Humidity in Alexandria and Cairo was slightly above normal.

Rainfall was deficient in the northern and central Sudan and normal in the southern Sudan.

TABLE SHOWING THE DEPARTURE FROM NORMAL FOR, JUNE 1938

DISTRICTS	BAROMETRIC PRESSURE		TEMPERATURE						RAINFALL	
			MAXIMUM		MINIMUM		MAX.+MIN./2			
	1938	Difference from Normal	1938	Difference from Normal	1938	Difference from Normal	1938	Difference from Normal	1938	Difference from Normal
	m.b.	m.b.	°C.	°C.	°C.	°C.	°C.	°C.	mm.	mm.
I. Mediterranean	1012·1	—0·1	26·9	—1·3	20·0	—0·4	23·4	—0·8	0	0
II. Lower Egypt	1011·5	—0·5	33·4	—1·2	17·3	—1·0	25·4	—1·1	0	0
III. Middle Egypt	1011·5	—0·1	34·0	—1·0	18·6	—1·0	26·3	—1·0	0	0
IV. Upper Egypt	1009·7	—0·3	36·5	—2·1	20·3	—1·6	28·4	—1·8	0	—
V. Western Desert ...	1011·8	+1·0	36·0	—3·2	19·9	—1·8	28·0	—2·5	0	—
VI. Red Sea (Egypt) ...	1007·4	—1·0	31·5	—2·1	22·8	—1·4	27·2	—1·8	0	0
*VII. Red Sea (Sudan) ...	1005·8	—0·9	36·5	—2·4	24·1	—1·6	30·3	—2·0	0	0
VIII. North Sudan	1008·5	+0·3	40·5	—1·2	23·2	—2·1	31·8	—1·6	1	—10
IX. Central Sudan... ...	1009·3	—0·3	38·7	+0·5	23·3	+0·5	31·0	+0·5	28	—21
X. South Sudan	1011·7	0·0	31·4	—1·6	21·5	+0·4	26·4	—0·6	156	+9

*Port Sudan only.

RAINFALL DATA FOR JUNE 1938

STATION	1938	Diff. from Normal	STATION	1938	Diff. from Normal
	mm.	mm.		mm.	mm.
Juba	196	+56	Adis Ababa	171	+ 36
Wau	170	+ 2	Roseires	116	— 13
Malakal	101	—31	Wad Medani	0	— 34
El Obeid	9	—28	Atbara	0	— 2
El Fasher	9	—10	Kassala	3	— 27
Khartoum	0	— 9	Port Sudan	0	0

L. J. SUTTON,

Director, Meteorological Service.

State of the River

Lake Albert at Butiaba fell two cms. during the month. Its level on July 1st, 1938 was 50 cms. above the normal and 13 cms. above that of the corresponding day of last year.

The Bahr el Jebel at Juba fluctuated above normal throughout the month. The levels were above last year's until the 22nd but below them for the rest of the month.

The River Sobat at Nasser rose sharply during the first four days, remained almost steady until the 7th and then rose faster than normal rate for the rest of the month. The level which was 46 cms. below normal at the beginning of the month being 14 cms. above it at its end.

The White Nile at Malakal rose gradually, the levels were below the normal during the first five days, but a few cms. above it for the rest of the month. They were below last year's until the 20th and a few cms. above them for the rest of the month.

The Blue Nile at Roseires fluctuated below both the normal and last year's levels during the first 11 days then rose rapidly and its levels were above both the normal and last year's for the rest of the month. The level which was 4 cms. below normal at the beginning of the month being 175 cms. above it at its end. At Khartoum the Blue Nile fell until the 8th then rose faster than normal rate afterwards. The levels were below both the normal and those of last year until the 26th and above them for the last four days. The River Atbara at Khashm el Girba was still in pools until the end of the month.

The Main Nile at Kajnarti fell slightly during the first 9 days, rose until the 18th, fell again until the 23rd and rose thereafter. The levels were below normal during the whole month, above those of last year during the first five days and below them thereafter.

The differences of the mean levels in June 1938 from those of June 1937 and from the normal 1906–35 were :—

STATION	Mean Differences of Levels	
	June 1938 Minus June 1937	June 1938 Minus Normal
	Metre	Metre
Juba	+ 0·02	+ 0·10
Nasser	+ 0·82	+ 0·91*
Malakal	— 0·08	+ 0·06
Roseires	+ 0·21	+ 0·39
Khartoum	— 0·31	— 0·27
Kajnarti	— 0·25	— 0·46

* Nasser normal is for 1922–1935 only.

Y. M. Simaika
Director, Hydrological Service.

Govt. Press 3,202-1937-250 ex.

June River Discharges missing

Ministry of Public Works, Egypt.—Physical Department

REPORT ON THE WEATHER AND STATE OF THE RIVER FOR JULY, 1938

The Weather

The weather of July was of the usual settled summer type, but was warmer than usual. No very high temperatures were recorded, the maximum in Cairo being 39°C. which occurred on several successive occasions. In Cairo itself the temperature was continuously above the normal by day and night during the 2nd and last weeks.

On the contrary the weather was cool and pleasant on the coast, thus at Alexandria and Matrûh, the day temperature only once exceeded the normal.

For the month as a whole the mean atmospheric pressure was below normal everywhere except north Sudan, while the temperature was above the average throughout Egypt and below the average in the Sudan. The Sudan rainfall was in excess in all districts except on the Red Sea coast.

TABLE SHOWING THE DEPARTURE FROM NORMAL FOR JULY 1938

DISTRICTS	BAROMETRIC PRESSURE		TEMPERATURE						RAINFALL	
			MAXIMUM		MINIMUM		MAX.+MIN./2			
	1938	Difference from Normal	1938	Difference from Normal	1938	Difference from Normal	1938	Difference from Normal	1938	Difference from Normal
	m.b.	m.b.	°C.	°C.	°C.	°C.	°C.	°C.	mm.	mm.
I. Mediterranean	1008·4	—0·9	29·5	—0·1	22·6	+0·3	26·0	+0·1	0	0
II. Lower Egypt	1008·2	—1·2	35·1	0·0	20·6	+1·0	27·8	+0·5	0	0
III. Middle Egypt	1008·0	—1·0	36·5	+0·9	22·0	+0·8	29·2	+0·8	0	0
IV. Upper Egypt	1007·2	—0·8	38·7	+0·1	23·2	+0·3	31·0	+0·2	0	—
V. Western Desert ...	1008·8	—0·4	39·0	—0·1	22·5	+0·4	30·8	+0·2	0	0
VI. Red Sea (Egypt) ...	1005·4	—0·8	34·5	+0·3	25·5	+0·6	30·0	+0·4	0	0
*VII. Red Sea (Sudan) ...	1004·7	—0·7	40·8	—0·1	27·5	—0·6	34·2	—0·4	0	—5
VIII. North Sudan	1008·7	+0·1	38·3	—1·3	25·2	+0·5	31·8	—0·4	74	+31
IX. Central Sudan... ...	1010·1	—0·6	33·6	—1·3	22·0	+0·1	27·8	—0·6	153	+29
X. South Sudan	1012·1	—0·2	30·1	—1·3	20·8	+0·2	25·4	—0·6	190	+28

*Port Sudan only.

RAINFALL DATA FOR JULY 1938

STATION	1938	Diff. from Normal	STATION	1938	Diff. from Normal
	mm.	mm.		mm.	mm.
Juba	90	—32	Adis Ababa	265	— 15
Wau	313	+125	Roseires	382	+ 193
Malakal	166	— 8	Wad Medani	122	— 10
El Obeid	129	+30	Atbara	4	— 14
El Fasher	55	—51	Kassala	113	+ 22
Khartoum	160	+108	Port Sudan	0	— 5

MAHD. HAMID MOHD.

A. Director, Meteorological Service.

State of the River

Lake Albert at Butiaba rose five cms. during the month. Its level on August 1, 1938 was 53 cms. above the normal and 10 cms. above that of the corresponding day of last year.

At Juba, on the Bahr el Jebel, there was a flush which reached its maximum on the 30th when the level was much above the normal and last year's ; excluding this flush the levels fluctuated above normal. The levels were below last year's until the 27th and above them thereafter.

The River Sobat at Nasser rose at about normal rate. The levels were above both the normal and those of last year.

The White Nile at Malakal rose at normal rate. The levels were above both the normal and last year's. At Gebel Aulia, regulation started on July 8th. The levels downstream the Dam rose until the 8th, fell on the 9th, remained almost steady till the 17th and rose sharply thereafter. The levels were on the average three cms. above those of last year.

The Blue Nile at Roseires continued its sharp rise until the 2nd, fell until the 9th and rose again with prominent peak of 20·70 on the 29th and 30th (298 and 280 cms. respectively above the normal). This was the highest recorded in July since 1900 when records began. Except for the period 14th–20th, when the levels were below the normal, the Blue Nile at Khartoum rose very rapidly reaching a level of 15.24 metres on the 31st (117 cms. above the normal).

The River Atbara at Khashm el Girba fluctuated above both the normal and last year's levels throughout the month.

The main Nile at Kajnarti rose faster than normal rate. The level which was 87 cms. below normal at the beginning of the month was 78 cms. above it at its end. The levels were on the average 12 cms. lower than last year's.

The differences of the mean levels in July 1938 from those of July 1937 and from the normal 1906–1935 were :—

STATION	MEAN DIFFERENCES OF LEVELS	
	July 1938 Minus July 1937	July 1938 Minus Normal
	Metre	Metre
Juba	— 0·16	+ 0·14
Nasser	+ 0·29	+ 0·11*
Malakal	+ 0·14	+ 0·11
Roseires	+ 0·62	+ 1·40
Khartoum	+ 0·14	+ 0·42
Khashm el Girba...	+ 0.02	— 0.10
Kajnarti	— 0·12	— 0·21

* Nasser normal is for 1922-1935 only.

Y. M. SIMAIKA,
Director, Hydrological Service.

Govt. Press 4,254-1938-250 ex.

July River discharges missing

Ministry of Public Works, Egypt.—Physical Department

REPORT ON THE WEATHER AND STATE OF THE RIVER FOR AUGUST, 1938

The Weather

The pressure distribution during the month of August was of the usual settled summer type with the exception of a few days during the 3rd week.

At the beginning of the month warm weather prevailed in Middle Egypt and the maximum temperature reached 39° C. in Cairo, being 4° C. above normal. Rather warm conditions continued until the 10th.

On the 14th a depression appeared over the Balkans on its way to the east. This caused southerly winds over the western coast, which are unusual at this time of the year, accompanied by very dry hot weather. The thermometer rose at midday to 44° C. (111° F.) at Salum, and this is considered to be the highest temperature ever recorded in any August in all the meteorological stations along the Mediterranean coast of Egypt.

In Cairo itself the temperature was only 39° C. or 4° C. above normal, but on the following day a shallow depression formed over Upper Egypt, near Aswan—an unusual phenomenon in August—accordingly upper winds at Aswan and even at Asyut veered to the south and a very severe hot spell was experienced for two days. The maximum temperature registered at Helwan on the 15th was 43° C. (109° F.), being 8° C. above normal, while at Siwa it reached 47° C. (117° F.), thus making this day the hottest ever known in any August at either station since observations began. At Almaza the temperature rose to 42° C. on the same day. With the passage of this depression towards the Red Sea on the following day a thunderstorm took place at Wadi Halfa.

On the 17th the cold front of the main depression struck Egypt and temperatures fell considerably, the weather remained pleasant until the end of the month.

For the month as a whole, the pressure was below normal throughout Egypt and the Sudan, while the temperature was above the average in Egypt (the same as the preceding month) and below the average in the Sudan except on the Red Sea coast. The Sudan rainfall was again in excess, except in the north and the Red Sea coast

TABLE SHOWING THE DEPARTURE FROM NORMAL FOR AUGUST, 1938.

DISTRICTS	BAROMETRIC PRESSURE		TEMPERATURE						RAINFALL	
			MAXIMUM		MINIMUM		MAX.+MIN.÷2			
	1938	Difference from Normal	1938	Difference from Normal	1938	Difference from Normal	1938	Difference from Normal	1938	Difference from Normal
	m.b.	m.b.	°C.	°C.	°C.	°C.	°C.	°C.	mm.	mm.
I. Mediterranean	1009·0	—0·8	31·0	+0·7	24·8	+1·9	27·9	+1·3	0	0
II. Lower Egypt	1008·7	—1·4	34·8	—0.2	20·8	+0·8	27·8	+0·3	0	0
III. Middle Egypt	1008·6	—1·0	35·8	+0·7	22·2	+0·7	29·0	+0·7	0	0
IV. Upper Egypt	1007·0	—1·5	39·3	+1·2	24·6	+1·5	32·0	+1·4	0	—
V. Western Desert ...	1008·6	—1·0	39·1	+0·2	24·2	+2·0	31·6	+1·1	0	0
VI. Red Sea (Egypt) ...	1004·9	—1·6	34·4	—0·2	25·9	+0·5	30·2	+0·2	0	0
*VII. Red Sea (Sudan) ...	1003·8	—2·2	42·6	+1·9	30·3	+1·6	36·4	+1·8	0	—4
VIII. North Sudan	1007·8	—1·4	37·4	—1·1	25·3	+0·9	31·4	—0·1	60	—4
IX. Central Sudan... ...	1009·6	—1·4	31·8	—1·6	21·3	0·0	26·6	—0·8	201	+52
X. South Sudan	1011·1	—1·2	29·7	—1·5	20·9	+0·3	25·3	—0·6	202	+27

*Port Sudan only.

RAINFALL DATA FOR AUGUST 1938

STATION	1938	Diff. from Normal	STATION	1938	Diff. from Normal
	mm.	mm.		mm.	mm.
Juba	245	+118	Adis Ababa	184	— 106
Wau	213	+ 3	Roseires	278	+ 59
Malakal	149	— 41	Wad Medani	142	— 2
El Obeid	180	+ 58	Atbara	9	— 29
El Fasher	207	+ 67	Kassala	107	— 16
Khartoum	121	+ 45	Port Sudan	0	— 4

MAHD. HAMID MOHD.

A. Director, Meteorological Service.

State of the River

Lake Albert at Butiaba rose 12 centimetres during the month. Its level on September 1st was 58 centimetres above the normal and 13 centimetres above that of the corresponding day of last year.

At Juba, on the Bahr el Jebel, there were some slight flushes and the levels were above the normal during the month and about 20 centimetres above those of last year.

The River Sobat at Nasser rose almost indentically with the normal. Its levels were slightly below last year's.

The White Nile at Malakal rose at normal rate. The levels were a few centimetres above the normal but about 10 centimetres below those of last year. At Gebel Aulia, regulation on the dam continued until the 26th where the U.S. level was maintained at R.L. 376. On the 28th the D.S. reached the U.S. level due to the natural rise of the Blue Nile, and the sluices were therefore fully open.

The Blue Nile at Roseires rose on the 2nd reaching a level of 21·05 metres or 263 centimetres above the normal. A rapid fall then set in until the 4th when the level was only a few centimetres above the normal. This, however, was followed by a series of peaks gradually increasing in height until the 27th when the river reached a level of 21·54 metres, the maximum for the month, (236 centimetres above the normal). After this date the river showed some minor fluctuations and the high levels were maintained to the end of the month. At Wad El Aies, on the Blue Nile, a discharge of 739 millions cubic metres per day was recorded on the 27th which resulted in the river overflowing its banks. At Khartoum the Blue Nile rose until the 5th, fell afterwards for 3 days, then rose again almost steadily to the end of the month when the level was 16·45 metres, the maximum for the month, *i.e.* 76 centimetres above the normal.

The River Atbara at Khashm el Girba rose sharply with violent fluctuations, reaching a maximum level on the 24th of 16·15 metres, (183 centimetres above the normal). Thereafter it fell with minor fluctuations to the end of the month when its level was still 92 centimetres above the normal.

The Main Nile at Kajnarti rose much more rapidly than normal rate. The level which was 105 [illegible] s above the normal at the beginning of the month being 206 centimetres above it [illegible] d.

The [illegible] the month has been the sustained and rapid rise of the Blue Nile and the high lev[illegible] prevailed in the River Atbara. The Main Nile repeated consequently the same [illegible] nd very high levels were recorded by the end of the month.

For the purpose of Silt determinations by the Physical Department the Reservoir level at Aswan was gradually raised from August 9th to a level of R.L. 105 metres, on August 21st.

On the 24th when it was realised that a high flood was expected, and there was a probability of having to use the Reservoir as a flood escape, its level was dropped until it reached 103·26 metres on the 30th. On the 31st further storage in the Reservoir was commenced in order to lower the levels downstream.

At Cairo, Roda Gauge experienced very high levels exceeding 24 pics (more than 20 metres) by the beginning of September.

The differences of the mean levels in August 1938 from those of August 1937 and from the normal 1906–1935 were :—

STATION	MEAN DIFFERENCES OF LEVELS	
	August 1938 Minus August 1937	August 1938 Minus Normal
	Metre	Metre
Juba	+ 0·18	+ 0·37
Nasser	— 0·12	+ 0·01*
Malakal	— 0·12	+ 0·07
Roseires	+ 0·59	+ 1·35
Khartoum	+ 0·29	+ 0·62
Khashm el Girba...	+ 0.47	+ 0.67
Kajnarti	+ 0·79	+ 1·87

* Nasser normal is for 1922-1935 only.

Y. SIMAIKA,
Director, Hydrological Service

Govt. Press 5,777-1938-250 ex.

August River discharges missing

Ministry of Public Works, Egypt.—Physical Department

REPORT ON THE WEATHER AND STATE OF THE RIVER FOR SEPTEMBER, 1938

The Weather

The outstanding feature was the cool weather which lasted for several days towards the end of the month.

At the beginning of the month a distant depression in the north gave rise to warm weather, a maximum temperature of 38° C. was recorded at Giza and Helwan on the 2nd being 5° C. above normal. The cool front of this depression crossed northern Egypt on the following day causing an appreciable fall in temperature. Summer conditions then prevailed and the weather remained free from any disturbances until the 14th, when a shallow depression formed over the Eastern Mediterranean causing light rain on the coast. Three days later a depression appeared off Salum and its passage was accompanied by strong south-east winds on the coast.

From the 19th to the end of the month high pressure was established over the Balkans decreasing gradually towards Egypt, north-west winds and cool weather prevailed. The weather during the night was particularly cool. On the 26th a depression developed near Cyprus and there were heavy showers on the coast of Egypt: the largest amount recorded being 36 mms at Matruh Airport on the 27th. The depression filled up rapidly and the weather became settled at the end of the month.

For the month as a whole the atmospheric pressure was practically normal, while the temperature was above normal on the Mediterranean coast, Upper Egypt, the Western Desert and the Red Sea coast, but below normal elsewhere.

The Sudan rainfall was in excess in North Sudan and below the average in Central and South Sudan.

TABLE SHOWING THE DEPARTURE FROM NORMAL FOR SEPTEMBER, 1938

DISTRICTS	BAROMETRIC PRESSURE		TEMPERATURE						RAINFALL	
			MAXIMUM		MINIMUM		MAX.+MIN. 2			
	1938	Difference from Normal	1938	Difference from Normal	1938	Difference from Normal	1938	Difference from Normal	1938	Difference from Normal
	m.b.	m.b.	°C.	°C.	°C.	°C.	°C.	°C.	mm.	mm.
I. Mediterranean	1013·0	—0·2	29·5	0·0	22·5	+0·6	26·0	+0·3	1	+1
II. Lower Egypt	1013·1	—0·1	32·2	—0·8	18·3	—0·2	25·2	—0·5	0	0
III. Middle Egypt	1012·8	—0·0	32·6	+0·2	19·6	—0·2	26·1	0·0	0	0
IV. Upper Egypt	1011·2	—0·1	35·9	+0·5	21·7	+0·6	28·8	+0·6	0	—
V. Western Desert ...	1012·4	—0·2	36·1	—0·2	20·4	+0·6	28·2	+0·2	0	—
VI. Red Sea (Egypt) ...	1009·0	—0·6	32·7	+0·2	24·0	+0·2	28·4	+0·2	0	0
*VII. Red Sea (Sudan) ...	1008·1	—0·2	38·4	+0·6	28·4	+2·1	33·4	+1·4	0	0
VIII. North Sudan	1009·7	+0·3	38·5	—1·1	25·2	+0·7	31·8	—0·2	42	+21
IX. Central Sudan... ...	1010·6	+0·1	33·6	—1·8	21·6	+0·4	27·6	—0·7	68	— 6
X. South Sudan	1011·6	—0·1	30·9	—1·8	21·2	+0·5	26·0	—0·6	120	—16

*Port Sudan only.

RAINFALL DATA FOR SEPTEMBER 1938

STATION	1938	Diff. from Normal	STATION	1938	Diff. from Normal
	mm.	mm.		mm.	mm.
Juba	109	— 1	Adis Ababa	297	+ 105
Wau	177	+ 11	Roseires	143	— 14
Malakal	73	— 59	Wad Medani	49	— 13
El Obeid	48	— 27	Atbara	31	+ 25
El Fasher	36	+ 6	Kassala	71	+ 13
Khartoum	62	+ 43	Port Sudan	0	0

MAHD. HAMID MOHD.

A. Director, Meteorological Service.

State of the River

Lake Albert at Butiaba rose five cms. during the month. Its level on October 1, 1938 was 55 cms. above the normal and 16 cms. above that of the corresponding day of last year.

The Bahr el-Jebel at Juba fluctuated slightly above both the normal and last year's levels throughout the month.

The River Sobat at Nasser rose steadily throughout the month, the levels being identical with the normal at the beginning of the month and 25 cms. above it at the end, The levels were below those of last year during the first 13 days and above them for the rest of the month.

The White Nile at Malakal rose at normal rate, the levels being a few cms. above the normal, but a few cms. below those of last year.

In order to lower the levels downstream, regulation was made on Gebel Aulia Dam, so as to maintain the Reservoir at the highest level it had attained due to the natural rise of the Blue Nile. Regulation started on September 5th and continued until September 20th, on which date the Reservoir level was gradually decreased.

The Blue Nile at Roseires fluctuated rather sharply throughout the month. The level at the beginning, middle and end of the month was about two metres above the normal, while on the 23rd it was only 26 cms. above it. At Khartoum the Blue Nile fluctuated above both the normal and last year's levels throughout the month.

The River Atbara at Khashm el-Girba continued to fall until the 6th. On the 7th a sharp rise took place after which the River fell steadily until the end of the month. The levels on the average were 60 cms. above the normal and 51 cms. above those of last year.

The Main Nile at Wadi Halfa also fluctuated above the normal, the levels being much above both the normal and last year's. The maximum level was reached on September 16th and 17th when Wadi Halfa gauge was 9·00 metres or 137 cms. above the normal. At Cairo, Roda gauge remained above 24 pics for 20 days. The gauge reached a maximum of 24 pics and 11 qirats, *i.e.* 20·29 metres or 162 cms. above the normal on September 10th, 11th and 12th. The levels were well above the normal and last year's throughout the month.

To check the rapidly rising river, Aswan Reservoir continued to be used as a flood escape. Its level was adjusted so as to keep Aswan D.S. at about 93:30. The Reservoir level which was 104·55 on September 1st reached a maximum of 107·13 on September 19th. On September 20th the stored water was gradually released and the Reservoir level fell to 100·50 at the end of the month.

The level of 93·32 at Aswan which was the highest actually reached this year is the highest recorded since 1898 when the reading was 93·63.

If there had been no regulation at Aswan, the maximum level reached this year would have been about 93·50.

The differences of the mean levels in September 1938 from those of September 1937 and from the normal 1906–1935 were :

STATION	MEAN DIFFERENCES OF LEVELS	
	September 1938 Minus September 1937	September 1938 Minus Normal
	Metre	Metre
Juba	+ 0·53	+ 0·32
Nasser	— 0·01	+ 0·15*
Malakal	— 0·06	+ 0·06
Roseires	+ 1·13	+ 1·16
Khartoum	+ 0·61	+ 0·72
Khashm el Girba	+ 0.51	+ 0.60
Wadi Halfa	+ 0·66	+ 1·12

* Nasser normal is for 1922–1935 only.

Y. SIMAIKA,
Director, Hydrological Service

Govt. Press 8,517-1938-250 ex.

September River discharges missing.

Ministry of Public Works, Egypt.—Physical Department

REPORT ON THE WEATHER AND STATE OF THE RIVER FOR OCTOBER, 1938

The Weather

For the first fortnight the distribution of pressure was of the usual settled summer type, with high pressure over the Central Mediterranean and to the west of Egypt and low pressure over the Eastern Mediterranean. Winds were mainly from north-east or north-west, and the temperature was about 2° C. above normal. Cooler weather followed, lasting for three days. A depression over Greece caused south-westerly winds and warmer weather in Egypt from the 20th to the 23rd, when the weather became cooler, and by the 25th the temperature had fallen to normal. During the last week north-east winds prevailed, and the weather was much warmer, the temperature in Cairo rising to 33° C. (91° F) on the 30th°; this is 5° C. above normal, and was the highest temperature recorded during the month.

On the last three mornings of the month there was widespread mist, the visibility in some places being less than a kilometre even as late as 10 o'clock in the morning. Small depressions off the coast of Palestine and in Upper Egypt gave rise to showers in the Canal zone and in Upper Egypt and the northern Red Sea. At Tor there was a thunderstorm on the 31st with heavy rain, 13 millimetres being recorded.

For the month as a whole the barometric pressure was slightly below normal in most districts. The mean temperature was everywhere normal or slightly below, while except over the northern Red Sea and in the Southern Sudan rainfall was also below normal. Relative humidity in Alexandria and Cairo was normal.

TABLE SHOWING THE DEPARTURE FROM NORMAL FOR OCTOBER, 1938

DISTRICTS	BAROMETRIC PRESSURE		TEMPERATURE						RAINFALL	
			MAXIMUM		MINIMUM		MAX.+MIN. ÷ 2			
	1938	Difference from Normal	1938	Difference from Normal	1938	Difference from Normal	1938	Difference from Normal	1938	Difference from Normal
	m.b.	m.b.	°C.	C.	°C.	°C.	°C.	°C.	mm.	mm.
I. Mediterranean	1016·2	+0·1	27·4	—0·5	20·3	+0·6	23·8	0·0	1	—6
II. Lower Egypt	1016·2	—0·3	29·8	—0·7	15·8	—0·5	22·8	—0·6	0	—3
III. Middle Egypt	1015·9	—0·1	30·0	+0·1	16·9	0·0	23·4	0·0	0	—2
IV. Upper Egypt	1014·6	—0·1	32·5	—0·1	18·6	+0·3	25·6	+0·1	0	—
V. Western Desert ...	1015·4	+0·6	32·0	—1·2	17·7	+0·1	24·8	—0·6	0	—
VI. Red Sea (Egypt) ...	1012·9	—0·6	29·8	—0·2	19·8	—0·6	24·8	—0·4	4	+4
*VII. Red Sea (Sudan) ...	1011·7	—0·1	33·6	—0·2	24·8	+0·2	29·2	0·0	6	—7
VIII. North Sudan	1010·7	+0·4	38·5	—0·6	23·2	+0·5	30·8	0·0	2	—2
IX. Central Sudan... ...	1009·9	+0·3	37·3	—0·2	20·4	—0·3	28·8	—0·2	10	—5
X. South Sudan	1010·3	—0·5	32·4	—1·6	21·1	+0·3	26·8	—0·6	124	+23

*Port Sudan only.

L. J. SUTTON,
Director, Meteorological Service

State of the River

Lake Albert at Butiaba rose 8 cms. during the month. Its level on November 1st, 1938, was 56 cms. above the normal and 13 cms. above that of the corresponding day of last year.

The Bahr el Jebel at Juba fluctuated above normal during the first 24 days and about it for the rest of the month. The levels were above last year's for the first half of the month and below them during the second half.

The River Sobat at Nasser rose at about normal rate, the levels were above both the normal and those of last year throughout the month.

The White Nile at Malakal rose faster than normally. The levels were continuously above normal, and after the first week above last year's.

The Blue Nile at Roseires fell at about normal rate the levels being much above both the normal and those of last year throughout the month. At Khartoum the Blue Nile fell rather faster than normally and the levels were also much above both the normal and last year's.

The River Atbara at Khashm el Girba fell at about normal rate, the levels being well above both the normal and last year's.

The Main Nile at Wadi Halfa fell slightly during the first ten days and rather faster than normally thereafter. The levels throughout the month were much above both the normal and those of last year.

The differences of the mean levels in October 1938 from those of October 1937 and from the normal for 1906–35 were :—

STATION	MEAN DIFFERENCES OF LEVELS	
	October 1938 Minus October 1937	October 1938 Minus Normal
	Metre	Metre
Juba	+ 0·16	+ 0·21
Nasser	+ 0·17	+ 0·26*
Malakal	+ 0·09	+ 0·20
Roseires	+ 2·01	+ 1·47
Khartoum	+ 1·66	+ 0·94
Khashm el Girba...	+ 0·71	+ 0·56
Wadi Halfa	+ 1·45	+ 1·27

* Nasser normal is for 1922-1935 only.

Y. M. SIMAIKA,
Director, Hydrological Service.

Govt. Press 9190-1938-250 ex.

October River discharges missing

Ministry of Public Works, Egypt.—Physical Department

REPORT ON THE WEATHER AND STATE OF THE RIVER FOR NOVEMBER, 1938

The Weather

Unusually cool and showery during the first half of the month; phenomenal rainfall at Alexandria on the 6th; frequent thick morning mists during the second half of the month.

Mild north-east winds prevailed at the beginning of the month, but conditions in Upper Egypt and the northern Red Sea area were disturbed, and thunderstorms occurred at Tôr and Aswân.

From the 3rd to the 9th Egypt was under the influence of a depression situated over the Eastern Mediterranean, and cool showery weather was experienced. Rain fell as far south as the Fayum, accompanied in places by thunderstorms. The rain was heaviest near the Mediterranean coast, 27 millimetres being registered at Damietta on the 3rd, 23 mms. at Borollos on the 4th and 30 mms. at Borg el Arab on the 6th. The most severe rainstorm occurred in Alexandria, where 62 millimetres fell during the twenty-four hours ending 8 h. on the 6th. This is the greatest amount of rain which has fallen at Alexandria in one day in November since records began in 1884, the previous record being 53 mms. on November 3rd, 1927. Of the 62 mms., no less than 38 mms. fell within half an hour, *viz.* from 4 h. to 4 h. 30 m. in the morning of the 6th, during a thunderstorm.

The depression deepened considerably on the 7th, and the wind strengthened, reaching gale force near the coast; a velocity of 80 kilometres per hour from the north-west was recorded at Alexandria on that and the following day, when the weather became much cooler, the maximum temperature in Cairo being only 21°C. (70°F.), or 5°C. below normal for the time of year, while at many other places the temperature by day was 7°C. or 8°C. below normal.

High pressure was established over western Egypt on the 10th, with a trough of relatively low pressure extending from the northern Red Sea towards Cyprus; the winds became north-easterly and the weather milder, though temperatures remained slightly below normal. For several days there were showers along the coast to the west of Alexandria.

During the last ten days the winds were mainly from between north-east and north-west and the weather settled. Morning mist or fog was widespread, and particularly intense in inland localities; on the 29th thick mist persisted in Cairo area until noon.

For the month as a whole the mean atmospheric pressure was above normal everywhere except in the southern Sudan, while the temperature was below normal in all districts except the central Sudan. Rainfall in Egypt was above normal, especially along the Mediterranean Coast. Rainfall at Alexandria amounted to 82 millimetres compared with a normal of 34 mms. for November, but three-quarters of it fell in the storm of the 5th and 6th alone. At Salum rain fell on 19 days, though the amounts were generally very light. A minor local earthquake occurred in Cairo on the evening of the 6th.

TABLE SHOWING THE DEPARTURE FROM NORMAL FOR NOVEMBER, 1938

DISTRICTS	BAROMETRIC PRESSURE		TEMPERATURE						RAINFALL	
			MAXIMUM		MINIMUM		MAX.+MIN./2			
	1938	Difference from Normal	1938	Difference from Normal	1938	Difference from Normal	1938	Difference from Normal	1938	Difference from Normal
	m.b.	m.b.	°C.	°C.	°C.	°C.	°C.	°C.	mm.	mm.
I. Mediterranean	1017·8	+0·3	23·2	−1·4	15·9	−0·4	19·6	−0·9	38	+17
II. Lower Egypt	1018·0	+0·2	24·2	−2·4	12·3	−1·0	18·2	−1·7	7	+ 1
III. Middle Egypt	1017·9	+0·4	24·4	−1·5	12·5	−1·6	18·4	−1·6	5	+ 2
IV. Upper Egypt	1017·2	+0·2	26·4	−1·7	13·0	−0·6	19·7	−1·2	0	—
V. Western Desert ...	1018·4	+1·0	25·8	−2·4	11·5	−0·9	18·6	−1·6	0	—
VI. Red Sea (Egypt) ...	1015·4	−0·5	25·6	−1·5	15·8	−0·7	20·7	−1·1	2	— 1
*VII. Red Sea (Sudan) ...	1013·8	+0·3	31·0	0·0	23·4	−0·2	27·2	−0·1	60	+17
VIII. North Sudan	1013·0	+0·5	34·7	−0·4	18·9	+0·1	26·8	−0·2	0	0
IX. Central Sudan	1011·5	+0·3	36·1	0·0	17·4	+0·6	26·8	+0·3	0	— 1
X. South Sudan	1010·3	−0·1	34·5	−1·0	19·0	−0·8	26·8	−0·9	14	— 4

*Port Sudan only.

L. J. SUTTON,
Director, Meteorological Service.

State of the River

Lake Albert at Butabia rose two centimetres during the month. Its level on December 1, 1938, was 53 cms. above the normal and identical with that of the corresponding day of last year.

The Bahr el Jebel at Juba fluctuated slightly above the normal with the exception of the third day of the month the levels were below those of last year throughout.

The River Sobat at Nasser continued to rise regularly until the 21st and fell slightly thereafter. The levels were above both the normal and those of last year, being 31 cms. above normal at the beginning of the month, and 92 cms. above it at the end.

The White Nile at Malakal remained almost steady throughout the month. The levels were above both the normal and those of last year.

The Blue Nile at Roseires and Khartoum fell normally. The levels were above both the normal and last year's.

The River Atbara at Khashm el Girba also fell faster than normally. The levels were above both the normal and those of last year.

The Main Nile at Kajnarti fell a little faster than normally. The level which was 129 cms. above the normal at the beginning of the month, being 41 cms. above it at the end.

The differences of the mean levels in November 1938 from those of November 1937 and from the normal 1906–1935 were :—

STATION	MEAN DIFFERENCES OF LEVELS	
	NOVEMBER 1938 Minus NOVEMBER 1937	NOVEMBER 1938 Minus Normal
	Metre	Metre
Juba	— 0·14	+ 0·07
Nasser	+ 0·50	+ 0·54*
Malakal	+ 0·20	+ 0·30
Roseires	+ 0·75	+ 0·85
Khartoum	+ 0·65	+ 0·33
Khashm el Girba...	+ 0·30	+ 0·19
Kajnarti	+ 1·64	+ 0·85

* Nasser normal is for 1922-1935 only.

Y. M. SIMAIKA,
Director, Hydrological Service.

November River discharges missing

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Ministry of Public Works, Egypt.—Physical Department

REPORT ON THE WEATHER AND STATE OF THE RIVER FOR DECEMBER, 1938

The Weather

Rather mild; less rainy than usual.

At the beginning of the month a depression off Malta with a secondary off Benghasi caused south-easterly winds and warm weather with overcast skies in Egypt. The passage of the secondary along the Delta during the night of the 2nd brought westerly winds and a fall of temperature.

On the 6th a depression was situated over the Aegean and subsequently moved to the eastern Mediterranean. Strong south-west winds prevailed on the coast, and a velocity of 82 kilometres per hour was recorded at Salum. For several days the eastern Mediterranean remained an area of low pressure, during which period the weather in Egypt was unsettled and showery. At Dikheila 16 millimetres were registered on the 7th, and there was a thunderstorm on the following day. At Alexandria 13 millimetres fell on the 13th.

South-east winds prevailed on the 17th and a period of mild weather began, lasting until the 28th; morning mists were frequent. The temperature rose appreciably on the 24th and 25th when there were small depressions off Alexandria and in the western desert.

On the 28th a small but vigorous depression passed along the coast, where winds rapidly rose to gale force, the velocity reaching 77 kilometres per hour at Salum, and 62 kilometres per hour at Alexandria. The weather became much cooler and continued to be disturbed, while light showers were general. On the 31st the velocity at Alexandria reached 85 kilometres per hour.

For the month as a whole the barometric pressure was everywhere well below normal, while except in Lower Egypt the temperature was above normal, but not by large amounts. Rainfall was appreciably below normal.

TABLE SHOWING THE DEPARTURE FROM NORMAL FOR DECEMBER, 1938

DISTRICTS	BAROMETRIC PRESSURE		TEMPERATURE						RAINFALL	
			MAXIMUM		MINIMUM		MAX.+MIN. 2			
	1938	Difference from Normal	1938	Difference from Normal	1938	Difference from Normal	1938	Difference from Normal	1938	Difference from Normal
	m.b.	m.b.	°C.	°C.	°C.	°C.	°C.	°C.	mm.	mm.
I. Mediterranean	15·6	—2·5	20·2	—0·1	12·1	+0·3	16·2	+0·1	18	—14
II. Lower Egypt	16·4	—2·3	21·0	—0·7	8·7	—0·1	14·8	—0·4	7	— 4
III. Middle Egypt	16·7	—2·3	21·6	+0·7	9·9	+0·2	15·8	+0·4	1	— 3
IV. Upper Egypt	16·8	—2·3	23·9	+1·0	9·8	+0·9	16·8	+1·0	0	—
V. Western Desert ...	17·8	—1·7	23·6	+0·7	8·2	+1·2	15·9	+1·0	0	—
VI. Red Sea (Egypt) ..	15·7	—1·7	24·1	+0·6	13·5	+0·8	18·8	+0·7	1	— 1
*VII. Red Sea (Sudan) ...	13·8	—1·4	28·8	+0·4	21·1	—0·3	25·0	0·0	0	—26
VIII. North Sudan	13·3	—1·6	32·1	+1·0	15·1	+0·7	23·6	+0·8	0	0
IX. Central Sudan	10·6	—2·3	31·6	+1·0	14·7	+0·6	24·6	+0·8	0	0
X. South Sudan	9·2	—1·9	35·5	—0·3	18·4	0·0	27·0	—0·2	1	— 6

*Port Sudan only.

L. J. SUTTON,
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Lake Albert at Butiaba fell 10 cms. during the n . Its level on January 1, 1939, was 46 cms. above the normal but 7 cms. below that :orresponding day of last year. The Bahr el Jebel at Juba remained almost steadi ghout the month. The levels were a few cms. above the normal but 16 cms. on the average below those of last year.

The River Sobat at Nasser fell slower than normal rate. The levels were much above the normal and last year's.

Owing to the high levels of the River Sobat the White Nile at Malakal remained steady throughout the month. The levels were above both the normal and those of last year.

The Blue Nile at Roseires and Khartoum fell at normal rate. The levels were above both the normal and last year's levels.

The River Atbara at Khashm el Girba fell about normal rate. The levels were a little above both the normal and those of last year.

The Main Nile at Kajnarti also fell at about normal rate during the first 13 days, then remained steady till the 19th and fell again at normal rate thereafter. The levels were above the normal and those of last year.

The differences of the mean levels in December 1938 from those of December 1937 and from the normal 1906–1935 were :—

Station	Mean Differences of Levels	
	December 1938 Minus December 1937	December 1938 Minus Normal
	Metre	Metre
Juba	— 0·16	+ 0·98
Nasser	+ 2·10	+ 1·61*
Malakal	+ 0·51	+ 0·45
Roseires	+ 0·47	+ 0·71
Khartoum	+ 0·31	+ 0·20
Khashm el Girba	+ 0·14	+ 0·08
Kajnarti	+ 0·69	+ 0·43

* Nasser normal is for 1922-1935 only.

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December River discharges missing